

Sampling book

R - 3H

Calc. .25 .33 .42 .56 .75 rat. 75
 Found .25 .3 .4 .55 .75 .75

Aug 20 1893

III R
OUT

Leaf miners in Alder, Woods Hole, Mass.
 July 15, 1893. Mining under the upper
 epidermis, leaving the lower green at first.
 Mines across everything except the large veins.
 Form brown blotches on upper side.
Stage hd. 7 Head much flattened, mouth
 projecting in front, clypeus occupying the
 central $\frac{1}{3}$ of which is the upper surface.
 Lobes rounded, projecting laterally, ocellus
 nearly central. Honey brown, paler toward
 whitish toward vertex. Venter beneath 2.
 Mouth dark brown, eye black. Abd feet
 very rudimentary, present on 5-12 (none
 on 13) Tho feet small, almost lateral
 indistinctly jointed, not used, faintly brownish.
 Body flattened, but rounded, of nearly even
 width, 13 rounded. Seg. sutures distinct
 almost accordion like, faintly 3-annulate.
 Shining whitish, subtranslucent, almost as

canal green. No anal plate, but very large bisected brownish c-sh. No warts or setae seen with lens. One host hole in surface at end of eat. & washed out with alimentary canal empty. Hd .75, shiny very slightly darker than body, mouth brown, eye dark brown. Body as before, a little wider through the thoracic segments. Hd shiny honey caramel color (pale yellowish white) c-sh obscure. On 5-12 two watery trans. areas per seg., the ant. of 2 next d. dots., post of 2 elongate pyriform sd patches connected over dorsum, slightly elevated. Feet concolorous, all rudimentary, the abd. represented by slight elevation on 6-12. Length 5.5 mm. Mat. burrows 30×13 mm ^(cont. 15 sh. hds) 35×14 mm 28×9 mm. Coon in earth, thin, almost transparent, brown. 3.5×1.5 mm elliptical

or as big as 1.5 mm
Stage hd. 25 Burrows less than 1 mm in diam., starting from slight elevated .4 mm circular egg puncture. Hd much flattened, broader than long, mouth projecting, lateral lobes bulging. Pale watery brownish. Body deeply incised, flattened, 2 wide, 3-4 rapidly tapering, 5-12 of even width, 13 rounded. Feet imperceptible with lens. Translucent watery, alimentary canal green. Length 1 mm. Egg shell appears as a thin circular white skin under the upper epidermis, .3 mm in diameter.
Stage hd. 3+ Like last stage but more accordion like, other segs distinctly larger. Milky translucent, alimentary canal green. Hd brownish. Feet very rudimentary, but visible. C-sh present not very distinct, large. Burrow 3 mm (Hd .25 sh. hd in it)
Stage 4 mm Same Burrow (18th hd found)

Stage .53 Much like mature larva
C. H. ant. leg 2, very faint brownish
as are the feet. Hd rather paler
than ant. Burrows 10-12 mm diam
(sh. beds. found .4+ and .25)

mature burrows spread, often con-
fluent over whole leaf.

(In one burrow found beds .3?, .6, .7)
(In another (.3) (.35- .35) (.4, .4) (.6, .53) (.7, .7))

Unhatched egg produces a slight
circular swelling on leaf .5 mm
in diam. visible on both surfaces.
It is thin delicate, milky white.
about .3 mm in diameter. Apparently
inserted by a saw cut from surface
smaller than the swelling.

Pupa Like fly but with rudimentary
wings. Entirely pale yellowish, the wings
more whitish & brown-black elliptical eyes

May 30, July 31, 1893 Fenusa varipes St. F.
(see Can. ent. XXV, 59)

Calc	♂	.56	.70	.88	1.12	1.4	1.76	1.76	1.76	mt. 8
	♀	.56	.70	.88	1.12	1.4	1.76	2.2	2.2	
Found					1.1	1.4	1.75	1.75	1.75	

OUT

Three large edge eating saw flies on
wild cherry Woods Hole, July 15, 1893
Stage D
Hd full at vertex, evenly rounded, anten-
nae obscure. Smooth shiny black with 4
dents in front. Ocellus depressed, width
2.2 mm Body large, full with s-v folded
ridge. The feet large & strong. Abd
small, on 6-11 & 13 with a very
rudimentary pair on 12. The body
is not elevated but held down to the
edge of the leaf. The abd. feet, though
small, are used. Segs obscure three-
annulate Body range yellowish or yellow
diffuse greenish shade from the
alimentary canal. The feet except
at joint, abd. feet outwards, anal
plate (anal) and the medium
large, round minutely piliferous
tubercles shining black. The tubercles

~~Citrus found Jul 29 Kds 1.8, 2.0, 1.8, 1.8, 2.0
 Eggs in series, lateral bands cuts along edge of leaf from middle to apex
 (about 1/6) nephel. circular, open on that edge, slightly another, 12mm diam
 white egg yellow inside, 1.2 x 1.5 mm?~~

July 24 { Little one sh hd 1.2 hd B 1.4?
5 larvae { 4 others hds 1.7 sh* 1.8 sh* 1.8 ^{dead} ~~shaded~~ 1.8 eating

Here is a fix. The same individual is
isolated during the last two
moult so there is no error
Stage hd 1.0, Sh hd 1.1 IV

Stage bed 1.3, Sh bed 1.4 V July 24

Stage bed 1.7 Sh bed 1.75 VI July 27

Molt July 31 new hd 1.75 ~~mm~~ (sh hd 1.8)

most Aug 4-5 New bed 1.8 VIII

Filed out Apr. 22. 1894

Hylotoma mcleayi

see Norton, Trans. IV 78

notata descurii (1872)

another larva !!

Empty box of ?

July 27 two to corn hds *2.0, *1.8? (w/1.7) (July 28 3rd corn)
[note: Holes & stage same as before, but the larvae eat]
mid July 31 Sh hd 1.75 new hd 1.75 molt Aug 4-5 hd 1.8
sh hd 1.8 Spots look larger & mature like

Other found July 29 Hds 1.8, 2.0, 1.8, 1.8, 2.0, 2.1, 1.8, 2.0, 2.1
Egg in series of lateral bands along edge of leaf from middle to apex
(about 1/6) regular circular ones on the edge about another 12mm diam
white egg again

are for our choke cherry (*Prunus pennsylvanica*)
Jefferson Highlands N.H. June 16 1895
would call green, but leaf nearly
Anan pale yellow the al. canal shining
distinctly green but interrupted
2 & 12. Tubercles black, small but
elongated distinct and about all alike. P-V
folds black. Hd. 1.1 $\pm$ Anal plates
6 or 7 black; no lines. Tho feet black.

There is another hd 1.75 $\pm$ Same but head
with brown-red instead of black
more on choke cherry June 20 hds black & red
3 in 1 another hd brownish tenebrous. Clypeus black
& a black dotted shade over eye and
in 2 p along occiput to vertex, but tubercles are
are as large and distinct & no trace of a
what 5d line. Body yellowish green.

& 13 p

awn

2 and

July 17

within

of near

with opaque web inside.

Larvae lash by holding body out straight
and suddenly curving it down

July 24 { Little one shed 1.2 hd B1.4?
5 larvae { 4 others hds 1.75* 1.85* 1.8^{dead} 1.8 eating
July 22. Other Stage B¹ hd 1.4 (sh hds 1.7 1.8) shiny
purish black, without depression.
vdy as ^{2,2} before, tubercles greenish
black and 2 distinct as finally
Stage hd 1.0 (sh hd 1.4) about as in 1.4 but
smaller, and the tubercles quite
indistinct except s-v, owing to the
small size and light coloration
they hardly appear more than blackish
spots. Color pale, more honey yellow
than in mod. tinged by the greenish
abumentary canal. New hds 1.8, 1.95 on July 24*
One shed. Sh hd 1.7, 1.8, 1.1 (new hd 1.4)
Stage B hd 1.4 Like 1.4 spots distinct but small
2 and 12 appear yellow as abumentary canal
shade is interrupted there. Head on July
24 about 1.3 not over 1.4. (July 25 about 1.4) (July 26 hd 1.4)
Molt July 27 (sh hd 1.4) (hd over) New hd 1.7 or 1.65 - not black yet
July 27 two to coon hds *2.0 *1.8? (or 1.7) (July 28 3rd coon)
[note 140 last stage same as before, but the larvae eat]
Molt July 31 Sh hd 1.75 new hd 1.75 Molt Aug 4-5 hd 1.8
sh hd 1.8 Spots look larger & mature like

Calc. .26 .38 .54 .77 1.1 ratio .70

Found .3- .4 .55 .8 1.1 1.1

[on Platanus found]
[on white oak]

OUT

IV

OK

Black oak slug, Woods Holl, July 23, 1893
Resembles I except in color.

Hd. left stuck in between on back of
leaf on the pink surface. No egg?

Hd. 3 mm oval, higher than wide, mouth
pointed: blackish brown, nearly
black on vertex, shining: mouth pale.

Hd. 4 mm oval, shining, pale brown,
darker around the black ocellus,
pale around mouth. June dark.

Stage hd. 5 Hd. yellowish testaceous
shiny, a brownish streak across
between the black eyes. Mouth dark.

Body thick through transverse seg.
slightly flattened, of even width
post. The feet scarcely visible from
above, pale. Abd. feet 6-12, 13 not
touching the ground in walking but
just held off. It appears to possess

Body shaped as before, whitish ^{at first} shiny ^{inside}
observed, shading into orange ^{at last} (not ochraceous
range as before) at anal giving a purplish shaded
centrally, centered by the dorsal anal vessel.
a pair of rudimentary feet. All
shiny sticky watery, whitish, shade
into orange yellow and the front
& sides of thorax. Alimentary canal
dark green.

Egg apparently inserted by a series of thrusts
from under side of the mandible in the leaf.
The larvae seem to have mined enough under
the upper epidermis to cause them to know
to become complacent, when they came out
on the upper side, but all the pink is gone.

Molt July 24 Head .8 orange yellowish, trans-
parent, so that green of thorax seen: eye
black: ant. projecting before, conical.
Same. Alimentary canal blackish or
green. Abd. feet 6-12, evident, used. None
on 13, ^{small vessel &} no trace very plainly visible, white
running in & ramifying through the body, con-
nected along stig. line. (Sh. hd. found on leaf .8)
Molt July 27 Hd. 1 mm. Same, but body very
slightly ankylosing (but not observing inside)
so that dorsal vessel contrasts
darker Aug 1, 1.1 mm hd. light yellow, eye black 1.1.
Entire ground.
Dined Aug 21, 1893

Calc. .45 .62 .85 1.17 1.6 ratio .73
 Found .4 .6 .9 1.1 1.5 1.5-6

U

Locust saw fly Wm. Holl, July 23, 1893
 Eating holes in leaf or on edge, singly
 Head round, wider than high, clypeus
 large width 1.2 Pale greenish eye
 black, a narrow blackish line
 along median suture & slight arc
 clypeus above: a lateral brown
 one above & behind eye. The feet
 moderate, abd small, 6-11, 13
 Segments rather obscurely annulate,
 shining between the annulets, general
 appearance not shiny, translucent
 yellowish green, alimentary canal
 darker but not contrasting
 through the dorsal vessel shows
 distinctly dark green no marks
 no tubercles.

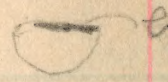
Stage hd. 9 Same but marking on
 head more diffuse & brownish

The feet black tipped.

Stage hd. 6 Hd pale shaded with
 brown most distinct in a vertical
 median & lateral stripe* Eye &
 mouth dark. The feet watery,
 black at base & tip. Body same
 but more greenish as the alimen-
 tary canal shows plainly.

Traces of blackish s-v tubercles
 others .6, .53, .53, .54 Or all blackish brown.

Stage hd. 4 Eating hole. Last body segment
 hd entirely blackish, almost black,
 shiny. eye black. mouth pale. The feet
 large, black except at joints. Body
 annulate, shiny, translucent whitish
 alimentary canal green. A pair of butter-
 like black anal tubercles, no sexual
 plate visible. Feet 6-11, small, concolor-
 ous. On 13 either none or rudimentary
 egg? Near the 4 larva's cut was a

cut and small mined(?) area
just under the lower epidermis.
Diameter .8 mm just cut  exit
Sh hd 1.5. Hd 1.4 same (no larger hds seen)
Aug 1 one hd 1.5 Same mouth brown, lateral
shock joint. Body lacks the conspic-
d-vessel, the 2 anal annulets are obscure
watery, Feet 6-11, Bandminator a pair
of anal processes, horn tipped, short
cylindric-truncate Anota same Hd 1.5
(Seen to wallow and try to enter ground)
One eating hd 1.5 Hd light yellowish tinged
marked as in 1.2, mouth brown. Body
as in 1.2 (and watery areas)

Calc	.64	.90	1.28	1.8	2.5	ratio .71
Found	.65	.9.65	1.45	1.8	2.2	

V

Black birch sawfly (*Betula lenta*)
Woods Hole July 24, 1893. Gregarious, on
the edge, eating down between the veins.
Eggs in lateral saw cuts along the
edge of the leaf, producing slight
swellings 1.5 mm. diameter. Not
mined and no fruit seen.

Stage ~~2~~ ^{hd 1.5} mm Hd shiny black, a bit
paler at sutures, round, about as
high as wide, dented at clypeus.
The feet black except at joints. Body
as in next stage but the pil. dots
much smaller and so less distinct
Stage ^(Sh hds over 9) 3 hd. .9 mm Hd uniform light reddish
brown, shiny, watery, clypeus slightly
indicated in black; eye black in a
black spot. Hd well rounded, rather
higher than wide, full at vertex. The
feet large, largely black, especially

6-10

at base abd. feet 6-12, 13 post
small, & becoming smaller post.
as the pair on 11 & 12 look like
(maybe) only spots. Pair on 13 not
colored, apparently present. Bases of
feet black, except on 13 where the
black patch forms a spot below the
black anal. a dot representing
foot on 13 and. Body shining ^{yellowish} green,
abdomen, canal obscured. segs.
broadly annulate but with 3 rows
of large black spots 3 per seg. besides
the oblique black mark on s-v
ridge & minute ventral dots. ant. to
legs. all bear short stiff black setae
not 5/27 No clear light orange red,
shining, minute, sparsely black
filike. Eye on black spot. ^(Dorsal 1.45) w 1.4 m
abd feet 6-10, 13 small. Tho feet pale
with slight black marks. Body same

not 7/2.2 No same, eye on black
spot. abd. feet 6-10 (none on 13) & at
s-v ridge prominent. Tho feet
pale brownish, with small
black marks near joint. it
Oblique s-v ridges have one
black patch and ($\frac{1}{4}$ ridge) to
and 5 small ones on the
remaining concolorous part. mal
on 3-4 it is half black. anal
anal feet? orange. Black spot, not
on body .25 mm diam, each
with distinct black seta. anal
Body same, bluish green dorsally
shading into ^{whitish} yellowish
green ventrally. tubercles
all shining blue black
Body a little wider than high
of even width, 13 rounded.
w 1.2 m (1.2) of narrow medio ventral orange spots
almost between feet, scarcely post.
not 7/5 (sh hd 1.8)

6-10

at the spots shiny blue black
small a row of stig. obscure orange
as the spots. ~~8 not seen?~~

Aug 7 lar with 1.8 hds turned
light yellow. heads pale
brown to yellow. Spun
reticular covering, whitish with
black below some chips at surface
black of ground. no shed heads.

For more at Plattsmouth molted
abundant gave sh. hds 1.8, 1.8, 1.8, 1.5,
heads 1.8. head hds up to 2.3

of last 20 at *Hylotoma pectoralis*?
the o. (See Fyles, Can ent, xviii 38)

side of legs hatched on back from
legs round fat eggs in side of abdomen
molt hds .6 but reddish, not black
Keene Valley N.H. July 1894

also
pills
abd feet 6-10 13 small. This first year
with slight black marks. Head same

anal plate still black

~~next Aug 1 (sh hds 1.45) Hd well rounded, full at
stigma but narrowed to a central apex
entire obsolete, but 4 denticles in front
denticles chryseus, shiny light red, with
few black spots. Eyes & spot black
of cylindrical of many even width to
which is a little small, abd feet ⁶⁻¹⁰ 7-11, 12-14
indicated by black spots 11, 12, 13 and anal
plate black, large O, much. This feet
large, pale brownish and small. Segs. and
annulate shiny green more yellowish last.
9 large black elongated round spots in a diagonal
each side per seg. above stig. line, 1 below
it first sparse & several small ones on
in the conspicuous, oblique divided
V ridge. A small black patch at base
abd feet 7-10. 8 minute ventral spots
on feet pale orange. Hd 1.8 mm
in series (7-12) of round medio ventral orange spots
aligned between feet, scarcely past.
Molt Aug 5 (sh hds 1.8)~~

Calc.	.26	.38	.54	.77	1.1	ratio .70
found.	—	.35	.55	.8	1.1	1.1

OUT
W

full seed
just 5 weeks

Black ship on *Crataegus* and *Amelanchier*
flum (*Amelanchier canadensis*)

Woods Hole, Mass., July 27, 1893.

Singly on upper surface of leaf, hibernating.
Egg A circular saw cut under upper
epidermis near middle of leaf, with
a hole in it where larva emerges
1 mm diam. Appears white, as only
the epidermis above hole. Remains
of egg skin inside appears to have
been 9 x .5 mm.

St. hd on leaf .35. Shiny black, smooth,
oval. Stretched out skin blackish.

St. hd .55 on same leaf. Oval, shiny black
mouth brown, eye prominent.

Stage hd .8 (Larva on same leaf) A st. hd is
oval, appears □, brownish black, shiny,
mouth pale. Held down under the
body, slightly retracted. Body blackish

One hatched from egg blister on upper surface
(and from below) June 16 1896 Hd .3 blackish retracted
Red very shiny colorless yellow, foot showings.

through thorax & enlarged, overhanging
head, abd even wider, 13 a little
smaller, rounded. Thor. feet short,
truncate, not visible from above
Abd feet 6-12 & a small pair on 13
not held off leaf. Body all shiny
sticky blackish with an obscure
dull green tinge, paler below.

Stage hd 1 mm (on leaf) Hd shiny dull
greenish brown somewhat dotted.
Eye black, mouth red brown.

Body shaped as before, abd. more tapering
of a dirty olive green, shading into blackish
at post. where the abdominal canal &
faeces show. Very shiny and distinctly
transparent, so that the tracheae from
the spiracle on 12 are visible & the
line above spiracle less distinct.
After existing for a while, 13
post appeared clear honey yellow

Really no food in it but a slight ventral
projection. a row of anal bristles.
Larvae vary, some more blackish.

Some heads quite dark brown or blackish
A sh. hd on leaf 1.1 mm (no hole found over 1 mm)

Molt immediately entering cocoon. Hd
whitish yellowish, mouth brown, eye black
as 1.0 mm not shiny light orange
yellow. Ant. annulate or slightly
crenate transversely, without marks
or areas. Alimentary canal only partly
enlarged. The last part showing dark
green. Tergum 11 clavate. The feet brown
Aug 20, 1893

Cocoon cell in ground, white but come out
whole, cemented inside with brown
substance. 5 x 3 mm

Eucampa cerasi ✓

Mr. McIlwray says the fly is
M. quercus-coccineae Apr 4 1895
X

Single larva on white oak pruning the
back. Much like T. Hd. oval, vertex
below 2. 4d pale honey caramel, vertex
blackish, eye black, food in mouth
green. (sh. hd. .9) W. .85 mm Body with thorax en-
larged, the feet truncate, faintly brownish
abd. pt. on 6-12 small. all milky
translucent white, al. canal green
in throat, blackish post. Tracheae
plainly visible ramifying in 12-13.
More shiny than T, all white, but not
as opaquely milky. The dorsal vessel
does not contrast.

Molt Aug 6 for ground. uniform flesh white
translucent but not shiny. Like
greenish glass. Trans. annulate or sternal
annulate by the summit of the creases
a little watery. All concolorous except
black eye & mouth. Hd. same size.
Alimentary canal faintly reddish.

Plattst. Aug 31 Two white, upper 1/2 hd black above
eye. Same very white. Post 2, or post 1 feet blackish,
rest same. 2.6 ± 3.5-4 3.4

Calc. 44 .59 .79 1.05 1.4 1.86 2.3
 Found .75 1.1 1.4 1.8 1.8-2.2 1.8-2.2

Y. aeneolus *canadensis*
 Chokeberry — *Pyrus acutifolia*
 2 sawflies on ~~Vaccinium corymbosum~~ (Zella
 named it) Woods Hole, Aug 3, 1893.

Look very much like S but structure
 nearer to V. Hd round, narrowing to vertex.
 Flat before on clypeus, shiny black.
 w. 2.2 mm. Tho feet large, entirely
 shiny black except at the base of
 the basal joint next the bend
 abd feet small, ^{black} on 6-10 with black
 spots on 12, 13, feet (1) on 13 range,
^{shiny blue} extensive. Large black spot (with
 minute stiff black setae) .3 mm diam
 larger than the tubercle. 9 is a
 square above spiracle, small one
 just, large oblique one on s-v ridge
 & narrow (about 45) small ones on the
 venter below s-v ridge. Anal plate
 lay. Δ black. Body dull when
 exactly the color of S, a little

more on *Crataegus flattulipes* Sept 19, 1898
C. Tomentosa

greenish on the back slightly
 shiny. A row of medio-ventral
 range spot, ^{scarcely} just to leg 1, 7-12.
 [Evidently allied to V] ^{large empty intestine & gut}
 Eggs laid in slight oblique open saw cuts along
 edge of leaf, which they swell out, 1.6x.8.
 Cuts 2 mm deep, 1.6 wide. Along both edges.
 Stage Hd .6 (seems like 1st or 2nd inst) Hd full at
 vertex, round shiny black. Pale brownish above mouth
 Tho feet black except at joint. Body light green-
 ish, the proportionately large black setiferous
 tubercle seen with a lens to be as in mat.
 abd feet minute, black, dots no ventral spots.
 Aug 5 Hd .75 Clypeus large & same light
 green, al canal giving an olive shade.
 [In sh. hds! Probably 75 that measurement & they had molting!] ^{who found}
 Another hood Hd 1.0 40, tho feet, anal plate &
 setiferous tubercle black. Body honey
 yellow, tho al. canal giving a faint
 greenish shade.
 Shed Aug 7 (seem) Sh hd fully .75, new hd 1.1 mm
 Larva cut around it, shed out far & dry then, then
 shed rest of body and whack it off so it falls.
 Sh hds very hard to find. When more, not so.
 Molt Aug 11 (Sh hd 1.0) New hd 1.4. Same light spot
 larger, black. General color greenish, tinged
 with dull yellow shiny.
 Molt Aug 15 (Sh hd 1.35) New hd 1.75 Black anal
 becoming larger & distinct as in mature spots .15-?
 Molt Aug 20 (Sh hd 1.6, 1.7, 1.75) Spots about .2 mm. New hd
 1.8-2.2 (all died) Aug 28, flattulipes then spots .2 hd 1.8-2.2
 red ground pear. Molt Aug 31 (Sh hd 2.2, 1.8) Spots .3

Calc .63	.85	1.15	1.55	2.1	
Found .6	.9	1.1	1.6	2.1	rat. 74

Z

Sample on dwarf sumach Rhus copallina
 Woods Hole, Aug 3, 1893 Eggs in saw cuts
 along edge of leaf on both edges, some
 20³⁰ on each leaflet. Cut slightly
 oblique to edge, filled & swelled
 out by the egg, turning part of horn
 egg thin shelled, elliptical, soft
 pale yellowish translucent $1.6 \times .8$ mm.
 Stage hd .6 Hd round, higher than wide
 shiny brownish black, paler above
 mouth eye black. The feet large
 black. Body cylindrical, a little smaller
 than, yellowish green with obscure
 blackish dots next d, 2 per seg on tho.
 large s-d, but s-v ones, lat absent on
 3 & 4 but the others very large, rounded
 projecting on thoracic segs. Abd feet
 6-10, small black with black
 spots 12, 13 and 14. Prothoracic anal

[Hylotoma humeralis Beaur
 on Rhus tripartita Riley 802]
 feet pale. Anal plate black the
 large tho tubercles are brownish
 black & bear several setae
 Aug 6 Stage hd .9 Light green, yellowish s-v. spots very
 distinct black in 4 rows as usual.
 Stage hd .6 Hd black, a broad Δ -shaped
 horn space in front. Body greenish yellow
 segs 2 acuminate. Dorsal black spots
 very narrowly divided by d line, 2 per
 seg. tho, continued post 5-8 smaller
 & smaller, not divided, 1 per seg. 3 large
 s-d elongate spots on 2-4 black. 2 rows
 on 2 (lat, s-v) one on 3-4 (s-v,) on color
 with body. All spots 1 per seg, tho
 s-d large, tho lat (stage post.) the smallest
 Stage hd ^(a.s. hd 1.6) 1.6 Same, but nearly all black
 Body somewhat flattened, tho feet
 very spreading. Tubercles same
 but the d. row fades out on joint 9.
 Body yellow, dull ochraceous, dorsal
 vessel obvious, greenish. s-v tubercle

on 3 & 4 with black or yellowish
Stage hd 2.1-2.4. small for body, rounded
flattened before, narrowing to central
vertex, black. pale in a large area
above mouth. Body somewhat flattened,
the s-v ridge very prominent; the
large tubercles much elevated, round,
on the s-v ridge almost like papillae.
The feet black except at joints, large.
Abd. small 6-10, rudimentary, 11, black
with spots on legless segs. Anal feet
pale. Segs 2-annulate, the posterior
annulets bearing the warts (except d.
3-4) prominent. Warts in 4 rows. Row
① dorsal, obscurely divided on mid-d line,
1 per seg except on 3 & 4 where there are
2, getting smaller ^{dist. only on thorax} post, & disappearing
before extremity. ② s-d, very large,
elevated, round, single per seg.
2-13 and 1 (none post). ③ Lat. (stiff post)

very large on 3-4, small post,
black but inconspicuous with body
on 2. ④ On s-v ridge, large, on 2-4
pale, or partly black, above bases of
legs., on 5-13 black, round (not oblique)
no others. Anal plate black. Each
tubercle bears many short setae.
Body orange yellow to reddish orange,
occasionally shiny, dorsal vessel purplish.
The large spots are .8 mm in diam.
Finally bright crimson with only orange
tint here and there
to down without melting

INDEX

to find *transgiss* species

- Footless, spinning a web — — — — — Q
- Leaf miners on alder — — — — — R
- Sitting flat on the leaf (slugs)
- With long furcate processes ^{G-H} — — — — — E
- With evident stiff white hairs¹¹ — — — — — N
- Smooth, not shining ⁶⁻¹²
- mature head 1.0 mm; rose — — — — — G
- mature head 2.0 mm; sage yellow ⁶⁻¹¹ — — — — — M
- Shiny, sticky (slugs)
- Large, blackish 6-12 — — — — — W
- Smaller, not black
- Head black — — — — — J
- Head pale, black on vertex — — — — — X
- Head pale, body orange and — — — — — T
- Sitting on the edge, never pushing.
- Abdominal feet present on joint 12.
- Green; white s-d line — — — — — B
- Greenish ochre; black s-d line — — — — — L
- Coppery olivaceous blackish scale color — — — — — F
- Green with minute white dots H
- Abdominal feet present on joint 11.
- Head green or partly green.
- Head partly black, as at first — — — — — A
- Entirely green — — — — — U
- Head black.
- Black tubercles absent.

Black tubercles absent.

Olivaceous, pale 8-V — — — — — 1

Honey yellow & black — — — — — K

Honey brown & leaden black O

Black tubercles present.

These minute dorsally

Green, tubercles black — — — — — D

Row of s-d black spots — — — — — P

Of nearly equal size

Body blue green — — — — — C

Body yellow — — — — — S

Abdominal feet on joints 6-10

Super-stig. segmentary black tubercles

Head reddish — — — — — V

Head black — — — — — Y

A single large s-d tubercle — — — — — Z

OUT

2A

~~on 2-needled pine~~
~~on 3-needled pine, buds~~
 Coll. August 4, 1893. Gregarious, eating on
 the needles. Lvs. 1.8. Light of the feet like
 batana and spit white juice. Head light

Cule. .6 .86 1.2 1.75 2.5 vater .70
 Found — .8 1.1 1.8 2.5

2B

Oct 1
 1896

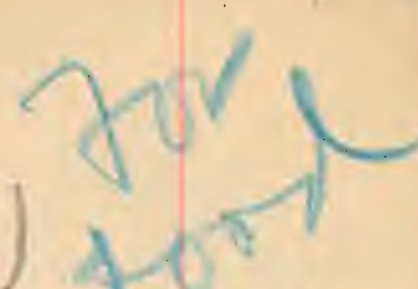
gregarious
 Edge eaters on black oak, woods hill 8/9/93.
 Egg laid in edge saw cuts along lobes
 of leaf; a dead blackened egg 1.5 x .4 mm
 cuts rather more than hemispherical,
 slightly oblique, 2 mm deep, less broad,
 (St. hd .8) stage hd .8 black, brownish above mouth.
 This feet & anal plate blackish. Filiferous
 tubercles as in next stage but smaller
 & blackish only so as to be undistinct.
 Body pale yellowish, al. canal green.
 Stage hd 1.1 Hd rounded, clypeus large
 full at vertex. Same. This feet large,
 black except at joint. Abd small,
 6-10, 13? blackish at base blackish
 rounded tubercles in 3 trans rows, but
 not forming a ^{very} great square as they
 are not exactly in line. Large oblique
 ones on 2-r ridge & s-r spots on
 hyps segs. anal feet pale.

Hyloterus scapularis (MacG)

Body shining greenish yellowish
 stage hd 1.8 (found by 6) hd well rounded,
 blue black, pale above mouth, with
 small black setae. Body as in next
 stage, dull brown, the filiferous
 spots all blackish, anal plate
 black. Body black dotted between the
 tubercles. Oblique s-r ridges outlined
 in blackish & bearing black setae.
 Stage hd 2.5 mm Hd round even blue
 black, antennae scarcely visible, small
 black setae in front. Body cylindrical,
 a little flattened, s-r ridge prominent.
 This feet large pale yellowish
 brown, the large basal joint ^{blue} black.
 Abd feet 6-10, 13 small; ant very
 rudimentary on 13, pale at tip.
 Anacanthous with body, thorax
 dotted with black. Segs. coarsely
 3-annulate with 9 large (35 mm)

black (or pale centrally) setiferous, ^{elevated}
spots in an approximate square
the post. lower two large , another
just stig. usually scarce black
s-r ridges oblique very prominent
pale, but margined with black
and bearing many setae. Anal
plate obscure, blackish. Between
the setae are numerous small
black dots bearing more minute
setae. A row of 4 ventral setiferous
black spots ant to legs and 6
median ventral round orange spots
bearing post. to just on 6-10.

Aug 1 One hd 68 uniform brownish yellow
(no trace from anterior to canal) well covered
@thru on black oak, Poland Springs, Me., Sept 2 1895
Hds shiny blue black. Shiny other yellow
tubercles conspicuous, each outlined by a narrow
dark ring and bearing a distinct black
seta. 2 vessel a greenish shade.
Imago at last (!) June 9 1895 - Hyalotoma
Scapularis? No 9

2C (see 2L) 
Solitary edge-eating sawfly on Byrrus
arbutifolia Woods Hole Mass. Aug 6, 1893
Stage hd 1.3 mm [Recalls 1] Hd round,
pale brown with a blackish stripe
right through the middle from mouth
to back. Eye black in a black spot,
mouth dark brown. Body normal
3-segmented. Thorax large, abd
rather small, slender, 6-11, 13 post
with small median ventral orange
spots 6-11. Body a little flattened,
s-r ridge prominent. Piliferous
tubercles very obscure, in 2 rows
on the 2 post annulets. Body all
clear yellowish green, leaf green
dorsally, the rest d. row of pil.
tubercles indicated in black on the
ant. half of body. Traces of a
yellowish s-d line. Spiracle black.

Stage hd 1.8 Same but darker brown
 Body clean green, almost emerald
 laterally, the feet pale whitish.
 Pil. tub. small, all black, the
 three rows per seg. on annulets, the
 ant. very small (iii) s-v ridge &
 venter immaculate, the form
 undulate, setiferous. A faint
 s-d yellow line bet. tuberc. ③ &
 ④. Spiracles black ringed. Tuberc.
 ① on the segs. are very distinctly black
 the spots about .2 mm in diam.
 nodules seen as white branching threads.

Stage 1.3
 Small one spun from corn of reticular white
 silk close to ground in fork of branch

On Mt. Adir., Keene Valley N.Y. Reticular
 corn. On *Anelachia canadensis* Jeffers
 On Highland, N.H. June 26 '95 (See 2L)

inst. *Cimbex americana* I mashed in sides
 walk, Roxbury Mass Aug 15, 1893 (Under linden)
 hd rounded, smoothly sheened, the
 sutures ^{clayey} ~~marked~~ ^{marked} by smooth places.

Pink white (slight yellowish) the
~~black~~ ocellus on a round black spot.
 with the rudimentary antenna below it
 W. 5? mm. Body somewhat flattened
 laterally, spirally curled, very coarse
 6-7 annulets, so that the seg. markings
 are difficult to distinguish from the
 annulets, if they are not just the same.
 The feet rather large, pale with a
 strong curved brown hook; abd feet
 6-11, 13 feet. Body annulets oval granular
 tuberc. absent d, but laterally s-v
 appearing as smooth shiny milky
 white rounded ones on the 1, 3, 4, 5 an-
 nulets. On the s-v longitudinal feet on
 form 2 clusters of s-8, conical, not

setiferous, the antenn cluster the higher
 color ^{slightly} yellowish white, the
 spiracles ^{subcordate} black, as also a narrow
 narrow d. line, disappears or 12 &
 obscure, divides into two by a frothy
 white shade. (which rubs off).
 venter thin skinned, white about
 then one drawn above the spiracles is a
 minute brown slit, the opening of the
 secretory ducts  as the junction of
 the incisures of the spiracular annulets.
 claws of the feet black. [Another on
 willow, Plattsmouth, Mo. Aug 31, 1893]

Imago Apr. 29 1894

Calc. .46 .54 .64 .75 .88 1.04
 .4 .52 .66 .83 1.1 1.4 1.8 not 1.8
 2E?

Larva 45 on green stems depressed, Keen
 Valley N.Y. Aug. 1, 1894 Egg traces below
 lower epidermis, carved through from
 upper side. elliptical papillae each
 well separated in straight rows
 oooooo, 11 to 12 in a transverse row
 irregularly distributed, many on no leaf
 size .8 x 1.2 mm Stage hd. 4.5 (sh hd. 4.2-4.5)
 Ht faintly brownish eye black. Roach
 whitish, rather opaque, unmarked, not
 shiny, food showing distinctly. L.V. fold
 prominent in center of seg. feet 6-13
 all in a row on back of leaf, set on
 venter and joints under side

Molt 2 Aug 1 Hds. 5.7 Same. Later curled
 up and covered with a ^{wet} white bloom
Molt 3 Aug 6 (sh hds. 5.5) new hds. 6.5 (= 5.5 + 1)
Molt 4 Aug 11 (sh hds. 7) new hds. 8 mm.
Molt 5 Aug 15 (sh hds. 7.5-8.1) new hds. 1.15
Molt 6 Aug 18 (sh hds. 1.15) new hds. 1.5
Molt 7 Aug 25 (sh hds. 1.45) new hds. 1.85

1.27 1.49 1.76 2.10 2.47 2.9 12.8.85
 1.4-1.5 1.8 2.1-2.2 2.45 2.9
 2E

White woolly s-f on red stemmed dogwood
 (*Stolonifera*?) Plattsburgh, N.Y.
 Aug 26, 1893. Flat, curled on back
 of leaf, anal end inside & slightly lifted
 Stage hds 1.8 Hd round, full at vertex,
 highest centrally, chylous sutures
 marked. Smooth black, covered with
 a white mealy substance, nearly
 obscuring the surface. Palpi are
 area above mouth ^{high up} ~~scellous~~ ^{crystalline} pale
^{scellous black} yellowish translucent. This feet
 rather small with black hooks
 Abd on 6-12, 13, large. Segs rather
 coarsely 6 annulate, the interseg-
 ments scarcely more distinct.
 s-v fold well developed, undulate
 Smooth, nearly opaque, honey yellow,
 all the dorsal region to s-v ridge
 covered with a mealy white substance

*The high up antenna below ocellus is
 probably what was called '2 eye' in
~~Images~~ after June & before August 1894
 partly or wholly obscuring the surface,
 or (later?) developed into filous
 threads like fine moved nearly
 1 mm long. Small, rounded
 gradate smooth plate, black
 Hd 1.8, 1.4, 1.8, 1.8, 2.2, 2.1, 1.5
 Hd 2.1 same, 2.2 (Spotted hd 2.4 sh hd only 2.4)
 Sh hd 1.4 apparently exactly the same
 Hd 2.5 or 2.45 Same ^{Same hd 2.2} ^{Sh hd 2.9 spotted hd 2.4}
 Hd 2.9 Same but no white mealy in
 hd or body, but mealy trace of
 powder, dorsal vessel shows
 darker, head, and shiny ^{1st seg mealy on 12 hrs, all}
^{thrusty faintly}
 Another hd 2.9 all mealy, same
 Feathery stuff arises from annulets
 2-5 above the spiracles principally.
 One seg 1.8 head black ^{sp. yellowish} ^{sp. yellowish}
 yellowish brown mouth ^{sp. yellowish} ^{sp. yellowish} body
 velvety yellow 6-annulate in the present
 gradate 2.4 (2 per seg) 1.4 (1 per seg) black
 2.4 s-v ridge of same color. No white
 Another same (sh hd 1.4 woolly hds) Hd 1.8 *

2F

Zonocera caprifoliina

not widely on brush honeysuckle II (thorn red berry bush)
 Plattsmouth, Aug. 27, 1893. Antlers spiny
 on back of leaf, anal end over the body



Head rounded, full at vertex, clypeus
 distinct, brown black, slightly weakly
 white, eye black on a black spot,
 w. 2.4 mm, lower part of face pale mint
 stiff white pile. Exuding yellowish
 fluid from superspiracular pores.

Thor. feet moderate, pale with black hooks.
 abd well developed, 6-12, 13. Segs
 7 annulate, coarsely as seg. in cuneus
 annulets 3, 5 & 7 with small white tubercles
 obsolete below spiracles. Color not
 shining under gray, opaque. becoming
 white below spiracles. On annulets
 7 a 3rd range spot and one on S-V
 fold centrally. A series of 3 or 4 black
 dots alternating with the white

tubercles on annulets 3, 5 & 7 white
 the parts of the S-V ridge not rays
 are black. Ventral region whitish
 even without molting among strips
 rather thin of dark brown silk (antennae 9/31)
 [Described by Gorton as *Hylotoma McLayi*
 but compare S and 2L]

See also *Zonocera inflata* (p. 17) if
 Gorton's work which seems to be
 the same thing.

None at Plattsmouth Aug 24 1897. The
 spotted annulets seem to be 2, 4 and 6
 orange on 2, spiracle on 4 (see also 1st)
 no ultimate stage.

Calc. 47 59 74 93 1.15 1.44 1.8 ant. 8
 found .6 .8 1.1 1.4 1.8
 Hd 1.1 Same as last, light brown. in front present a band
 all whitish with up to dirty red shade in front portion
 of al. canal. 2G
 July 16 1896 Emma

On Poplar, *Calliphora* M. ant. curls
 when at rest and eats its shed. Under
 Sh. hd about .6 Ver. .8. Abd. hd brownish
 eye black. Venter pale whitish. Thorax light
 black eye on black spot. Thorax light
 enlarged, abd. tapering. The feet large
 spreading, abd. small 6-11 (13 off leaf)
 Body not shiny, smooth. Translucent
 whitish, a dirty shade from al.
 canal. Scars, annulets, wrinkles,

the seg. 2-13 somewhat folded.
 [Just among the larva was gone (down?). Probably
 with loss, was 7 and remember that it was
 slightly transverse of water. Last head was pale]
 On Poplar, *Calliphora* M. ant. curls. July 24 1895
 Hd 1.4 Pale brown shiny, eye black. The enlarged feet spread
 pale, feet 6-11, 13. Seg. with annulets inclining
 well marked folded, whitish, not shiny, feet much
 down to blackish green, a few from a black
 shade in 13 ant. which looks like a mark at
 first glance. Thorax higher than head. Feet on
 venter, usually curled. Shiny when at rest.
 Mouth 1st the hd is light brown, almost orange.
 no marks anywhere. Feet all whitish.
 July 28 Hd 1.5 (no shed) Body all pale yellowish white, a
 light orange tint in al. canal. Antennae small, a double

2H

Two white pine sp. max, had been
 gregarious on white pine, Plattsburgh 9/28/93
 closely like 2A. Sh. Hd 1.4, black, shiny
 Body opaque not shiny white, with
 2 rows of sooty black spots, but no
 more. S-d row elongate, tapering feet
 broken, forming a large patch in 13, and
 to the black tipped antennal bases.
 Lateral spots quadrate, rest of body
 immaculate. The feet black, abd 6-13
 Molt hd 1.4 & 1.8 shiny blackish, on a
 pale yellowish ground, eye black, mouth
 region pale. Body shiny, tinged with
 sordid yellow, the feet pale except
 hooks, spots shiny, and sooty.
 Crawl in surface of ground

This must be *Lophyrus abbotii*
 of Packard p. 753

Edwards in 3
 1896

18 25 35 5 7 7

55 75 75

Enicospila fasciata (but not)

On yellow brick
different hillside
W.H., July 28 1895

21

NOT = T for 1st 2 small

Black oak along Plattsburgh Aug 28, 1893

2I: T = J: X Probably a black headed T

Exactly like T but head & thro. feet
entirely shiny black. W. hd. 53-mm.

Molt Aug 31 Hd. 75 same. Ant. thro. feet (2)

pale, 2 post pair (3-4) black.

Sept 8 Entered ground. (not seen) Sh.

hd. black, 55

Other Weehawken N.J. Sept 15 Same on

black oak Molt S. 619 Hd. 75

the feet whitish long
cuneate. Body similar, but blacker and thin. feet
immaculate. Side of thorax bright silver (sh. hd. not
on S) some dorsal yellowish lines. Sclerites, not black

JA

White oak, Plattsburgh: like J but head very
pale brown, eye black. Body more yellowish

than X, side of thorax faintly marked
with ochraceous. Shiny, slender, whitish

Ab. covered red line and blackish
post. 7th feet pale, post 2 with black
claws. Molt Sept 1 all whitish yellowish

and shiny. with brown. water clear.
hd pale yellowish, eye black. Sh. hd. 75

OUT

2J

Metay edge sitting aside S-f Plattsburgh Aug 28

Sitting on edge of a hole but curl the

post 1/2 of its body apically. 1st feet w.

vertices round, clypeus distinct; pale

shiny, brown with a nebulous deep

black longitudinal patch on vertex

& one dorsally over the black eye;

clypeus & mouth rather darker brown.

w. 1.2 mm. minute stiff pale pile.

The feet moderate, pale. Abd 6-11, 13

Segs. moderate, 4-annulate, smooth

and shiny subtranslucent leaf

green, dorsal reddish orange, showing

a broad s-d blackish green band

broken up by a series of seg patches &

extending down to include spiracle

double by ridge, ant. above, & feet

below also blackish, but dorsal

spotted with pale, corresponding to

the obsolete tubercles. The s-d patches also contain pale spots for tubercles on annulets 2 & 3, but less distinctly.

Went down without visiting Sept 2

Images Apr 19 1894 ♀

Nematus ventralis Say
apparently, but the larva
totally different. See Harris.
Ent. Corr 27, when he describes
2P

Nematus Menclattii n. sp.

OUT

2K [See 2PA]

Found on poplar, Plattsmouth, Aug 31, 1893
(sheds 1.8) h.s. normal round, black,
antennae pale, w. 2.2 mm. Edges cuter
& wheatears; this feet moderate, pale
abd feet 6-11, 13, well developed, with
short black anal spines. Body
smooth, shiny, faint 3 annulate
dorsal vessel yellowish. Bluish or leaf
green with a series of large orange-
yellow lateral blotches 3-12 and
numerous black spots as follows:—
2 trans. rows per seg. above spiracles
the ant. of 3, post. of 4, the lower (lat)
one largest. 2 black patches on the
lateral of 5 & ridge, the lower post
one somewhat broken. On 13 a large
lateral black patch, & dorsal annulate
blackish cloud.

Images Apr 19 1894

Nematus Hudsoni n. sp.
nem. notabilis & infocinatus

4 wings smooth yellow hds 1.1-1.2 brown, black
underside of elytra darker. Same but paler on
S-V folds vary from distinct to absent. S-d line white

This fruit pale. All tubercles setae on
 skin of tubercles showing yellowish
 Sept 12 (tubercles covered yellow setae
 on surface of ground. (dead) Apr 20 '94
 [Box] from Kew Valley on white birch
 Apr 25 - 1895 - Hylotoma very like the large
 S 12 F

Have median ventral orange dots; = 2C Larva is flatter than S, green, not yellow, with 5-d lines distinct. Anterior nearly all concolorous not large black. Not as described. The last colored, not 2 large black.

On black birch Jefferson Highlands 15-1895 Stage IV Hol 1.4 ± like 2C = 2C except for first plant) Hol with a diffuse broad black stripe over clypeus the back of head, then narrow band to black eye; the wing clear. Seg 3-annulate, and dots on 2 post. annulets and 1 patch on the undulate prothoracic folds, setiferous; shining light distinct red pale yellow line across; tubercle ① approximately distinct on thorax. 6th feet very slender 6-11 marked with blackish; anal plate dusky, no perceptible median ventral spots; black marks at base of the feet.

4 mites on smooth willow buds 1.1-1.2 brown, blackish under and slightly darker. Same but paler on S-V folds very faint distinct is absent. S-d line white

Discolored Hol 1.4 July 21 '95. (St. Hol 1.5) mites 1.6 mites 28 (Hol 1.6) new Hol 1.8 did pick up 9/8 mature?

~~On black birch, Plattsmouth, Sep 31, 1893 Like 2C. Hol 1.8 mm. Pale greenish yellow, eye & mouth black, a dusky black stripe over vertex & upper part of clypeus. The feet large, abd small 6-11, 13. Body as in 2C, 3-annulate. The obscure shining tubercle greenish black annulets 2-4, 5-V ridge very undulate, setiferous. Light green under d. with a broad distinct pale yellow s-d band between tubercles ① & ②. Spiracle black, 5-V ridge very faintly discolored brownish. The feet pale. All tubercle setae on line of tubercles showing yellowish Sep 12 Potentilla cover of yellow silk on surface of ground. (dead) Apr 20 '94 [Dis] from Keene Valley on white birch Apr 24-1895 Hylotoma very like the large S = 2F~~

2M

Sept 24

Leaf miner on white sumac, v. Plattsburgh
 Sept 2, 193. Hd very flat, lobes rounded
 with callus on dorsal aspect, mouth
 projecting in front, clypeus, medially
 shiny pale brown, shading into dark
 brown on sides of lobes & mouth, eye
 black, w. 1.0 mm. Bod, much flattened,
 rounded post, segs of nearly equal width
 but joint 14 half as wide as 13 with
 distinct incision. A rounded s-v ridge
 the feet small, black, almost latent
 unneeded; abd. none. A large brown
 blackish on 2 dorsally & a smaller
 one ventrally between the 1st feet of 2
 large, quadrate, brown bordered with
 black post, color slightly shining
 reddish greenish white. Length 5 mm
 not transparent, on color is grayish
 shed skin light cinereous, thick, opaque.

spiracles black.

Molt from ground Hd more rounded, mouth
 scarcely projecting. Pale watery yellowish
 eye concolorous. w. 1.0 mm, labium
 outlined in brown. s-v ridge prominent,
 undulate. The feet concolorous, scarcely
 distinguishable. Body subtranslucent
 white with a yellow tinge becoming
 darker or ochraceous on the thoracic segs.
 A mine had 5th hds viz: - 1.0, .75, .6, .4, .3 ±. Eggs
 laid singly but mine 50x10 mm, 30x15 mm
 mines under the upper epidermis?

(see mounted slides for stages)

more Plattsburgh in fall 1894 image July 4 1895

Germosa cuncta

2 N

Stage hd 1.4 (Eating) Hd rounded, normal, dull black, slightly slaty. Eye & mouth black. Antennae pale around clippers. Some short pale hair. Body of nearly equal width slightly largest at end, the feet small, abd. well developed 6-13 (24)

Segs 6-annulate, rather strongly, as
distinct as seg incisures. Color slaty
black dorsally, ^{and shiny smooth} the d. vessel showing
darker. Below spiracles olive gray.
The feet pale. On annulus ² a trans.
row of minute white points, with
a second one on annulus ¹ 3 slightly larger,
a few less conspicuous ones on 5 & 6 ridge.
Molt (Sept. 1.4) Hd 1.4 blackish above, feet
below, eye black in spot, mouth brown.

Esperanto

Antennae 2 palp 1 pointed, unringed brown
ringed. Body entirely dark olive gray*,
neatly 6 annulate, not shiny, minutely
regularly granular. Feet watery. Spines
in paler areas. In white points & tubercles
basal vessel giving a faint dark shade
B abbreviated, subterminal, 5 well de-
veloped, footers (* = a slaty blue-black)
Bored in cotton & soft wood

Answer - $\ln 1.2$ greater

Flies in abundance Apr 13 1894

Emphytra canadensis

Calc 50 .62 .78 .97 1.2 1.5 1.5 1.5
 [S] { 4 " " " " " 1.5 1.9 1.9
 Found .75 1.0 1.35 1.6 1.8 1.8
 2.0

On willow, Mattabych, Sept 6, 1893
 Same caterpillar, allied to S and Y.
 length 1.8 Rounded. full at vertex. Antennae
 unthrued, shining black, a little pale
 stage just around the mouth where are a
 few short setae. Thor feet very large
 and spreading abd small 6-11, 13 a sp
 pair 12 representing feet, slender, the
 2 feet smaller feet. 9 black tubercles
 2 in a square, the middle and one
 side a little and 1 line. the ant. row
 of smaller. Some small spots in a
 row ventrally, one post. seg. 5-6
 a ridge with a large black spot and
 on one seg with 1 or two more
 small ones. Setae minute black.
 Body greenish yellow, with a pale
 whitish tinge. more green dorsally.
 A white 3rd line between tubercles
 below, segs.

Massachusetts Institute of Technology.

Information is desired in regard to the following
 graduates, from whom no direct information has been
 recently received

is joint a
 all feet
 .25 mm dia
 no branch)
 relates.
 things
 rule of
 uni, compact

July 26 1894
 to vary from
 cells
 like

same

longer than body. feet. 3-12. This under

calc of 8.50 .62
[of 8] { 4 " "
Formed

(clavicornis). Bag just over
An willow, then and they hatched—
Edge eaten Aug 10 Hds. 6 reddish black
Hds 1-8 Rn. Bag greenish yellow pale,
obscured, all over much, most
distinct d on thorax and 5-8
just around anal pl. black. Trace of
faint short as yellowish sd line below @
spreading. Hs. feet black.

or 12 ^{reper} Aug 11 Hds 1.0-1.1 Brownish red
(shds. 75) yellowish green, the
feet small feet & anal plate black. 805
in a square tiny dark very distinct, all
a little ^{comp.} present, black, a pale yellow
smaller, fluted, black spotted
now over.

ridge Went back Aug 11-12 Vol 1.6 red. Spots
about .2 mm in diam. (Vol 1.35) ←

on a new Arctostaphylos 1.4 Black or brown-red.
small or deep greenish yellow, tubercles all
present black and smooth. A
body of white red line. This feet black.
white to large. Some green and
a white red line between tubercles.

① and ②. The feet, except as joint &
abd. underneath black. Anal feet
yellow. Red spots about .25 mm dia
(a 1.8 shld found in the same branch)
SV ridge prominent, undulate.

Entered ground without molting.
cocoon of yellow silk double; sides of
coarse thick net, inner thin, compact
(dead June 2, 1894)

Other mellow Keene Valley N.Y. July 26 1894
near N. H. Salisbury Sept. 11. 1894 Hds vary from
black to light red with black cells
Hds 1.5, 1.55, 1.6 Spots very small, like
dots diam. $.1 \text{ mm} \pm$

Hds 1.6 spots .25 mm ± 6 median vertical (10-15)
 faint orange spots

making a rasping sound.
Inst. d. 14 (sl. hd 1.4) Ven. 14-16 mm. Same
 slaty black except feet. Lateral orange
 patches on 2 annules 3-12. Two median

Calc. 74 .57 .76 1.0 1.4 1.8 2.4 max. 75
 Found .6 .75 1.0 1.4 1.4-6

2P

~~Little black edge, whereas, eating
 holes in a poplar leaf, P. trichoptera
 Sept 6, 1893. Sh hd. 6 w. .57 Ht round
 shining, black. The feet black except
 at joints, body slightly annulate, abd.
 feet small; smooth, shiny dark
 greenish gray.~~

~~Molt Sept 7 new hd. .75? Same amount
 greenish black with anal fork,
 indistinct annulate abd feet off leaf
 6-11, yellow on 13.~~

~~Molt Sept 11 (Sh hd. .75) new hd. 1.1 shiny greenish
 black eye & joint black. Body obscure
 annulate, smooth shiny obscure blackish
 shiny anal pale black tipped. The~~

~~small a body greenish yellow, tubercles all
 present black but small. A
 body greenish white & d. line. The feet black.
 whitish large, more green
 a whitish d. line between tubercles~~

never hatched
 in a large cluster on the middle of
 the leaf near the midrib not
 on any veins, cut II to surface.]

~~Molt Sept 11 (Sh hd. 1.0) new hd. 1.4 Ht shiny
 black joint with 4 grooves & 2 denticles above
 the clypeus. Antennae around the mouth
 brown. The feet pale olive marked
 with black, large, abd 6, 11, 13, small,
 pale green. Body smooth, irregular
 5 annulate the crease more like
 slight folds. Shiny blackish olive-
 vaceous with a series of lateral pale
 orange spots, distinct centrally. Some
 are bluish than others & the orange spots
 vary in distinctness. White nodules
 scratch the anal prongs on the leaf
 making a rasping sound.~~

~~Molt Sept 14 (Sh hd. 1.4) new hd. 1.4-1.6 mm Same
 slaty black except feet. Lateral orange
 patches on 2 annulets 3-12. Two median~~

Stage 40. .53- .60 mm. flattened, lobes
bulging, $\frac{1}{2}$ concealed below. Pale
brown. A ^{black} brown cth. ^{very} large as 2 d.
Segs deeply incised, 2 rather wider,
of unequal widths, a small point
projecting back anal plate. Body
flat. No feet. White, opaque, a
shaded d. black band 3-11 cut at
the incision. A ventral blackish
band with a medio-v. whitish
patch on 7-10. Some fine lateral
& anal hairs. Nine balloon shaped
with scimitar stem  10-12 mm
long & about 5 mm wide. At widest.
Eggs deposited near midrib (or layer var)
as that balloon nine radiate from
it between the layer var. Nine under

the upper epidermis. Frass all packed down in the stem of the mine. ^(2x7)
Some old mine, larva gone, more spindly, and the beads seen. When both end whole back end lively with a loud anastomosing sound (of the sharp anal plate on leaf?)

Crow cut out an elliptical area at end of mine which falls to the ground with the larva enclosed and between the 2 epidermises. Makes holes in leaf as if cut with a punch. After fallen larva comes half out of one end and bites the case along.

Some hump on leaf by a thread like secretion

It is a Tineid, Butispila nysaeae as written me by Dr. Lintner.

(second 16 species)

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- ✓ Leaf miner on oak — — — 2M
- Sitting flat on leaf (slugs)
- abd. feet present on 12
- Sluggish, slug-like
- ✓ Hd. & thor. feet black — — 2I
- ✓ Hd. pale brown, eye black — JA
- not slinging (pine feeders)
- ✓ Head red — — — 2A
- ✓ Head black — — — 2H
- abd. feet absent on 12 — — — 2G
- Sitting on edge, (often wandering)
- abd. feet on joints 6-13
- White, woolly — — — 2E
- ✓ Gray, orange spots — — — 2F
- ✓ Blackish gray — — — 2N
- abd. feet on joints 6-11, 13
- Head white — — — 2D
- Hd greenish — — — 2L
- Hd brownish
- Black tubercles — — — 2C
- Tubercles obsolete — — — 2J
- Head black
- Lateral yellow spots
- Color green — — — 2K
- Color blackish
- yellowish & tubercles — — — 2P
- abd. feet present 6-10, 13 — — — 2B

3A = 2P

~~Little black edge whorls on willow
Central Park N.Y. May 13, 1894 = 2P?
Eating holes which soon reach the edge
Hd rounded, shiny black; w. .55 mm
The feet long, spreading, black above
on 6-11, 13, moderate. Segs reddish
4-annulate slightly shiny blackish
green, subtranslucent. Anal prongs
concolorous. Hold up body & whisk
vent May 14 Hd 7 same.~~

~~vent May 17 Hd 1.0 pale orange spots
vent May 19 Hd. 1.4 ^(shld 1.1) same shiny
translucent blackish, spots lateral above
s-r fold, on annulets 2-3; also feet small
pale, Hd shiny black. Spots 3-12
spots yellowish rather than orange
vent 10 mm May 23~~

Nematodes ventralis Say ♂

.33 .45 .61 .83 1.2 water .74
9 35 9 1.15

3B

~~Solitary but several on a leaf, eating
holes in leaf willow, Central Park May 19
Edge whorls egg singly in D saw cut
just under upper epidermis on the
surface anywhere, 1.5 mm diam
Larva Hd .3 Hd blackish testaceous, looking
black without lens, shiny, eye &
mouth black, lips thin body. Feet
Feet 6-11, 13, 4 annulate, not
very shiny, subtranslucent, greenish, this
Feet & anal prongs blackish
another Hd .55 Dull testaceous a blackish
long line on water, 1 on up of on each
ocellus. eye black, mouth brown
Body faintly tinged with blackish above
apricola & a little on s-r ridge 2-4,
pale again along d. line. Dull greenish,
no special color, this feet concolorous
Red feet  Anal prongs blackish~~

Put in can "3B" (one from May 1895 - normal, the other →

Wet 1 June 21. Hd. 9 rounded, flattened before
 faint brownish lined
 pale green, a black longitudinal line
 on vertex, reaching top of clypeus.
 a lateral trans. line over ocelli. not
 quite reaching center, mouth brown
 Red top of leaf green, a few blackish
 dots - 2-3 shade line, venter a
 shade paler. Feet small 6-11, 13
 Red green, anal prongs blackish.
 Body scarcely annulate not shiny
 tubercles showing as a white line

Wet 1 June 23 Hd 1.15 ^{clear} 1.15 green annule
 same, changed and as black as
 ocelli, an additional patch on apex
 of clypeus. Body uniform leaf
 green, not shiny except on the
 creases of annulets, feet clear.
 No annules, a pale clear green
 less yellowish than before, tracheae
 very distinct, white. Scarcely

Another hd. 9 on willow Jefferson Highlands, 21. 84
 June 16 1895 - wet June 17 Hd 1.2 Red green with a
 distinct black sd line 2-11 and a faint 3-8 me. sd
 lines & streaked transversely on the annulets.

annulate at all; very uniform
 Anal prongs with a very faint
 blackish shade a few setae
 on anal plate. Ocelli a very black
 spot. annules on head fainter
 (Hds. 33, 55, 9, 9, 1.15 on May 23) +
 other 16 hd. 9, same as 1.15

(Hds May 25 9, 9 1.15 1.15 blackish sd dotted line
 9 1.15 1.15) (Hds May 27 1.15, 1.15, 1.15, 1.15, 9, 9)
 May 28 7 pale yellow of age corn between
 the leaves, of silks, not coarse.

Hds May 23	1.15	9	9	.55	.55	—
" " 25	1.15	1.15	1.15	9	9	9
" " 27	corn	1.15	1.15	1.15	1.15	9
" " 29	corn	corn	corn	corn	1.15	1.15

Other Plantstegh June 6 on willow
 Hd 1.15 mm. Immature from this June 18 '94
 with leaf green with few black annules
 (black green too when fresh)
 annulets annulets

another large one from can 3B (1895) 1895

Single solitary on ^{around the edge of the nest} ~~limestone~~ ^{used for building} ~~limestone~~ ^{rock} on
Slater Island, June 1 1898. *Rests curved
around a fresh branch and colored
to resemble bird dropping (pilled)
Hd rounded, each side ~~above~~ ^{above} ~~clay~~ ^{clay}
a prominent conical 6-jointed antennae
ocellus just above it. Maxillary & labral
palpi appear 5-jointed; ^{dark brown} ~~dark brown~~
shiny shading paler around outline of
mouthparts. Antennae pale rigid
brown; palpi black. The feet black
at base then pale with testaceous tips
Segs ⁱⁿ distinctly annulate with wavy
conical tubercles bearing fine setae.

Larva in the can. *Myiophila populi* (L.)
 May 12 Hd. 1.5. Body brown. Ant. 12. 1st 4 black. 2nd 11. 3rd 11. 4th 11. 5th 11. 6th 11. 7th 11. 8th 11. 9th 11. 10th 11. 11th 11. 12th 11. 13th 11. 14th 11. 15th 11. 16th 11. 17th 11. 18th 11. 19th 11. 20th 11. 21st 11. 22nd 11. 23rd 11. 24th 11. 25th 11. 26th 11. 27th 11. 28th 11. 29th 11. 30th 11. 31st 11. 32nd 11. 33rd 11. 34th 11. 35th 11. 36th 11. 37th 11. 38th 11. 39th 11. 40th 11. 41st 11. 42nd 11. 43rd 11. 44th 11. 45th 11. 46th 11. 47th 11. 48th 11. 49th 11. 50th 11. 51st 11. 52nd 11. 53rd 11. 54th 11. 55th 11. 56th 11. 57th 11. 58th 11. 59th 11. 60th 11. 61st 11. 62nd 11. 63rd 11. 64th 11. 65th 11. 66th 11. 67th 11. 68th 11. 69th 11. 70th 11. 71st 11. 72nd 11. 73rd 11. 74th 11. 75th 11. 76th 11. 77th 11. 78th 11. 79th 11. 80th 11. 81st 11. 82nd 11. 83rd 11. 84th 11. 85th 11. 86th 11. 87th 11. 88th 11. 89th 11. 90th 11. 91st 11. 92nd 11. 93rd 11. 94th 11. 95th 11. 96th 11. 97th 11. 98th 11. 99th 11. 100th 11. 101st 11. 102nd 11. 103rd 11. 104th 11. 105th 11. 106th 11. 107th 11. 108th 11. 109th 11. 110th 11. 111th 11. 112th 11. 113th 11. 114th 11. 115th 11. 116th 11. 117th 11. 118th 11. 119th 11. 120th 11. 121st 11. 122nd 11. 123rd 11. 124th 11. 125th 11. 126th 11. 127th 11. 128th 11. 129th 11. 130th 11. 131st 11. 132nd 11. 133rd 11. 134th 11. 135th 11. 136th 11. 137th 11. 138th 11. 139th 11. 140th 11. 141st 11. 142nd 11. 143rd 11. 144th 11. 145th 11. 146th 11. 147th 11. 148th 11. 149th 11. 150th 11. 151st 11. 152nd 11. 153rd 11. 154th 11. 155th 11. 156th 11. 157th 11. 158th 11. 159th 11. 160th 11. 161st 11. 162nd 11. 163rd 11. 164th 11. 165th 11. 166th 11. 167th 11. 168th 11. 169th 11. 170th 11. 171st 11. 172nd 11. 173rd 11. 174th 11. 175th 11. 176th 11. 177th 11. 178th 11. 179th 11. 180th 11. 181st 11. 182nd 11. 183rd 11. 184th 11. 185th 11. 186th 11. 187th 11. 188th 11. 189th 11. 190th 11. 191st 11. 192nd 11. 193rd 11. 194th 11. 195th 11. 196th 11. 197th 11. 198th 11. 199th 11. 200th 11. 201st 11. 202nd 11. 203rd 11. 204th 11. 205th 11. 206th 11. 207th 11. 208th 11. 209th 11. 210th 11. 211st 11. 212nd 11. 213rd 11. 214th 11. 215th 11. 216th 11. 217th 11. 218th 11. 219th 11. 220th 11. 221st 11. 222nd 11. 223rd 11. 224th 11. 225th 11. 226th 11. 227th 11. 228th 11. 229th 11. 230th 11. 231st 11. 232nd 11. 233rd 11. 234th 11. 235th 11. 236th 11. 237th 11. 238th 11. 239th 11. 240th 11. 241st 11. 242nd 11. 243rd 11. 244th 11. 245th 11. 246th 11. 247th 11. 248th 11. 249th 11. 250th 11. 251st 11. 252nd 11. 253rd 11. 254th 11. 255th 11. 256th 11. 257th 11. 258th 11. 259th 11. 260th 11. 261st 11. 262nd 11. 263rd 11. 264th 11. 265th 11. 266th 11. 267th 11. 268th 11. 269th 11. 270th 11. 271st 11. 272nd 11. 273rd 11. 274th 11. 275th 11. 276th 11. 277th 11. 278th 11. 279th 11. 280th 11. 281st 11. 282nd 11. 283rd 11. 284th 11. 285th 11. 286th 11. 287th 11. 288th 11. 289th 11. 290th 11. 291st 11. 292nd 11. 293rd 11. 294th 11. 295th 11. 296th 11. 297th 11. 298th 11. 299th 11. 300th 11. 301st 11. 302nd 11. 303rd 11. 304th 11. 305th 11. 306th 11. 307th 11. 308th 11. 309th 11. 310th 11. 311st 11. 312nd 11. 313rd 11. 314th 11. 315th 11. 316th 11. 317th 11. 318th 11. 319th 11. 320th 11. 321st 11. 322nd 11. 323rd 11. 324th 11. 325th 11. 326th 11. 327th 11. 328th 11. 329th 11. 330th 11. 331st 11. 332nd 11. 333rd 11. 334th 11. 335th 11. 336th 11. 337th 11. 338th 11. 339th 11. 340th 11. 341st 11. 342nd 11. 343rd 11. 344th 11. 345th 11. 346th 11. 347th 11. 348th 11. 349th 11. 350th 11. 351st 11. 352nd 11. 353rd 11. 354th 11. 355th 11. 356th 11. 357th 11. 358th 11. 359th 11. 360th 11. 361st 11. 362nd 11. 363rd 11. 364th 11. 365th 11. 366th 11. 367th 11. 368th 11. 369th 11. 370th 11. 371st 11. 372nd 11. 373rd 11. 374th 11. 375th 11. 376th 11. 377th 11. 378th 11. 379th 11. 380th 11. 381st 11. 382nd 11. 383rd 11. 384th 11. 385th 11. 386th 11. 387th 11. 388th 11. 389th 11. 390th 11. 391st 11. 392nd 11. 393rd 11. 394th 11. 395th 11. 396th 11. 397th 11. 398th 11. 399th 11. 400th 11. 401st 11. 402nd 11. 403rd 11. 404th 11. 405th 11. 406th 11. 407th 11. 408th 11. 409th 11. 410th 11. 411st 11. 412nd 11. 413rd 11. 414th 11. 415th 11. 416th 11. 417th 11. 418th 11. 419th 11. 420th 11. 421st 11. 422nd 11. 423rd 11. 424th 11. 425th 11. 426th 11. 427th 11. 428th 11. 429th 11. 430th 11. 431st 11. 432nd 11. 433rd 11. 434th 11. 435th 11. 436th 11. 437th 11. 438th 11. 439th 11. 440th 11. 441st 11. 442nd 11. 443rd 11. 444th 11. 445th 11. 446th 11. 447th 11. 448th 11. 449th 11. 450th 11. 451st 11. 452nd 11. 453rd 11. 454th 11. 455th 11. 456th 11. 457th 11. 458th 11. 459th 11. 460th 11. 461st 11. 462nd 1

On young willows Hattahigh June 6, 1894
Long, rather slight, abd feet 6-11, veg
small and 13, short, but all used. It
is a common and is solitary.

4/2/98



32



Below 4000 feet (10-4-2)
not as of 2400. were
more than on side
than is now indicated

rather many black spiniferous dots
which are also on anal plate
Spiniferous minute dark. Under glass
annulets have each an ochraceous tinge
not perceptible 1.4 marked 1.4 all shining
color of opaque green, marked as before

Another curled around vein left on edge of young bilberry
leaf. Plainfield N.J. May 16 1896. 1408 shiny brown. Red shiny
brown d, milk white s-v, setiferous. Tubercles black, ant. very large
2 trans rows on segs. legs colored a green above white d line.
Feet all underneath smooth; dorsal plate ringed; abd. segs 6-12, 13.
Also among a pair of larvae 3C all in white. Segs. tuberculate
4-annulate, tubercles on 1, 3 with usually 2 setae apiece. Larva wingless
around 1/4 in. long. used for pupa.

Single solitary on licheny ^{around edge of rock, under pine} on
Slater Island, June 1898. * Rests curved
around a fresh branch and colored
to resemble bird dropping (milled)
Hd rounded, each side ~~above~~ ^{above} clypeus
a prominent conical 6-jointed antenna
ocellus just above it. Maxillary & labial
palpi appear 5-jointed; Hd ^{dark brown} brown black
shiny shading paler around sutures of
mouth parts. Antennae pale rigid
brown; palpi black. Thor feet black
at base then pale with between wings
segs ^{int} distinctly annulate with water
conical tubercles bearing fine setae.

brushed with white from and

up between 4-6 ...
obtrusive ... up by a rockland

Larva in the can. *Agrotis populi* (L.)

[illegible]

May 15. Vol. 8. 1. * Quite mostly little whorled many thin bedded
local it is 6' - 5' - 4' - 3' Broken white & some

35. Moll May 20 Hd 2.5 cm. Dorsum shiny brown on 2
patch on 3 & 4, on 6 white to 11 middle patches on
12, 13, 14. 'milk white' 4 feet, broken narrow line
white. All water in conspicuous white
part of dorsum more limited. Shiny brown. Tubercle makes 1/2 inch
angulate as same line 3 D. pulled. The 2 white patches quest as
carted. small 1/2, a brown protuberance. dorsal white setiform, pale.

On young willows Plattsburgh June 6, 1894
 Long, rather slight, abd feet 6-11, veg
 small and 13, short, but all used. It
 tight on edge, not whole solitary
 a little pointed post, anal pl. slightly
 projecting and whole face, ocelli &
 a black spot, a dusky mark below
 marginal antenna much from the
 pulv. of 1.35 in. Segs rounded 6 anal
 is again slightly prominent. Soft and
 shining clear yellowish green a
 soft ventral greenish dusky shade
 with well defined edges d. and lateral
 anoth more obscure below the
 tracheal line. Sub-ventral again with
 rather many black spiniferous dots
 which are also on anal plate

Spines the summit dark. Whole glass
annulets have each an obscure tinge
Vest purple and 1.4 each 1.4 all shining
substant opaque green, mounted as before

collected opaque green, mounted as before

Looks remarkably like bird dirt
 On other views the 2 white d.
 patches appear together.
Went down in ground May 24

4/2/96



3C



little



Ant

white on
 trim.

not a
 reduplicated

more than one sector

Other eggs seen (4-4-2)

Got 6 others,
 all small
 along the
 palisades
 not Lee n. j.

May 24 1896

(all dead 1897)

Got ²⁵the full grown Bedford
Park ¹⁰ing. May 25 1897
went ¹⁶down same night.

Out ¹⁴for the April 1, 1898

Masoxyle ¹²wp

8 1.5 2.1 2.5

1y3

sons & Vining.

Another place valley N.Y. July 6 84
298 Apr 26 1895 - a green & black Nematode

3E lateralis?

Solitary on white birch, Plastophy June 6
hd rather flat before, green, a black band
five cells each side near to vertex
and narrowly in center of d and median
to vertex, cell in black spot hd 1.4±
Body leaf green, rather dark, slightly
shiny, feet 5-11, 3 small concolorous
body not elevated, but bent with leaf.
edge center. Segs rather indistinctly
5 annulate, with minute dense
setiform dots on 2 central annulets
and more distinct on thorax and S-V
body slightly translucent tracheae
evident, no scales. Anal feet
absent but on end of plate a
pair of clear short processes with
enlarged ends molt June 10 Hd 1.5 (sh hd 1.4)
Same black shade on clippers. Segs 4 annulate
not shiny annulets 2 & 3 higher & shiny
no setiform dots, but minute pale dots
hd & thorax. Blackish bands at base of the feet

Another on willow River Valley N.Y. July 12 1895
The white band and tracheae are absent. The
setiform dots below skin. S-V narrow and

3E? on white birch in the
Riverside Drive, eating large
holes in the leaves (Petula
populifolia). The holes are
adjacent to swellings in a
2ary line about the middle
which appear to have been
formed by the eggs probably
between the 2 surfaces of
leaf. Vein slightly distorted
as if egg laid before
full grown. Holes finally reach
edges. Larvae as 3E but no
setae to be seen. Anal
swollen pump clean or
dusky smoky. Feet very
small especially on 11
Body not elevated or but
slightly; usually adapted

On mostly willow Jefferson Highlands N.Y. June 10 1895 - Hd 1.5 green dots
conspicuous as appears green. 13 distinct & anterior great all white.
white stripes on annulets separated from S-V line. forming a broken
lateral line. Black dots on thorax & S-V & spiracles, but obscure in others

and stage 184
very
white
eye
end
rather
g
ho
d bi
13
into
an
in
leaf
as have in school
sh hd 1.9 molts 1.8
molt for next stage 17 larvae, 17 larvae, 17 larvae

another place valley May. July 6 1894
299 Apr 26 1894 - a new black Nematodes

to the edge. No black on
hd. except the line from eye
and faint in ventral surface
w. .75 mm

Evidently = 3E 2 stages younger.

Cell .⁵¹ .735 1.05 - 1.5 - not .

Anterior hd. .5 faint hornish black
strip up from eye bend back to
front edge of hd. leg black. Roaf
same. no tubercles. Feet w/

dist 6-9. Slightly pale green
than next stage. The feet

and a clear claw dent. No wrinkles
anal pump dusky

(Central Park 1000 ft. Sh hd 5-m)
Ehd hd 1.1 Yea. green; a small

absc. 3 cany. dist. tubercles evident
pair. tubercles show faint esp on

ovary. All same. Hd shade
less green than in next stage

Same 6-m
not thin, annals 2 & 3 higher & slightly
few acanthous dots, but mainly pale on

hd & thorax. Blackish marks on base of feet

another on willow (Hatch Valley N.Y. July 12 1894)
The whole head and thorax are covered with white
fat granules below skin. S-V region a little
black dotted. (Put in as a 2nd 4B in series; last stage)
Timey March 15 1896

Straight solitary on willow June 6 1894
flat-tongue. all feet small 6-11, very
slight on 13. Hd whitish & little marked

with green not shiny, w. 1.4 mm eye &
mouth black. Body a little flattened.

on last appearing so, S-V region rather
prominent, feet slightly tapering

Soft leaf green, scarcely at all yellow. In
not shiny. A distinct white S-d line

appears, and leaf turning on 13
the it is a small, down minute

white streaks on all the annals as
for a transverse line. A few obscure

white dots ventrally. Feet pale
thoracic was clear. Cells resting

on edge. Legs not very distinct
6-annulate, no tubercles. Spinacles

minute brown. Some down? June 9
On mostly willow Jefferson Highlands N.Y. June 16 1895 - Hd 1.5 green dots

conspicuous as appears green. 13 distinct of entire green all white.
white absc. on annals separated from S-d line, forming a broken
transverse line. Black dots on thorax & S-V & spinacles, but obscure in others

Sh hd 1.9 mm 1.5 mm 1.7 mm 1.9 mm 2.1 mm 2.3 mm 2.5 mm 2.7 mm 2.9 mm 3.1 mm 3.3 mm 3.5 mm 3.7 mm 3.9 mm 4.1 mm 4.3 mm 4.5 mm 4.7 mm 4.9 mm 5.1 mm 5.3 mm 5.5 mm 5.7 mm 5.9 mm 6.1 mm 6.3 mm 6.5 mm 6.7 mm 6.9 mm 7.1 mm 7.3 mm 7.5 mm 7.7 mm 7.9 mm 8.1 mm 8.3 mm 8.5 mm 8.7 mm 8.9 mm 9.1 mm 9.3 mm 9.5 mm 9.7 mm 9.9 mm 10.1 mm 10.3 mm 10.5 mm 10.7 mm 10.9 mm 11.1 mm 11.3 mm 11.5 mm 11.7 mm 11.9 mm 12.1 mm 12.3 mm 12.5 mm 12.7 mm 12.9 mm 13.1 mm 13.3 mm 13.5 mm 13.7 mm 13.9 mm 14.1 mm 14.3 mm 14.5 mm 14.7 mm 14.9 mm 15.1 mm 15.3 mm 15.5 mm 15.7 mm 15.9 mm 16.1 mm 16.3 mm 16.5 mm 16.7 mm 16.9 mm 17.1 mm 17.3 mm 17.5 mm 17.7 mm 17.9 mm 18.1 mm 18.3 mm 18.5 mm 18.7 mm 18.9 mm 19.1 mm 19.3 mm 19.5 mm 19.7 mm 19.9 mm 20.1 mm 20.3 mm 20.5 mm 20.7 mm 20.9 mm 21.1 mm 21.3 mm 21.5 mm 21.7 mm 21.9 mm 22.1 mm 22.3 mm 22.5 mm 22.7 mm 22.9 mm 23.1 mm 23.3 mm 23.5 mm 23.7 mm 23.9 mm 24.1 mm 24.3 mm 24.5 mm 24.7 mm 24.9 mm 25.1 mm 25.3 mm 25.5 mm 25.7 mm 25.9 mm 26.1 mm 26.3 mm 26.5 mm 26.7 mm 26.9 mm 27.1 mm 27.3 mm 27.5 mm 27.7 mm 27.9 mm 28.1 mm 28.3 mm 28.5 mm 28.7 mm 28.9 mm 29.1 mm 29.3 mm 29.5 mm 29.7 mm 29.9 mm 30.1 mm 30.3 mm 30.5 mm 30.7 mm 30.9 mm 31.1 mm 31.3 mm 31.5 mm 31.7 mm 31.9 mm 32.1 mm 32.3 mm 32.5 mm 32.7 mm 32.9 mm 33.1 mm 33.3 mm 33.5 mm 33.7 mm 33.9 mm 34.1 mm 34.3 mm 34.5 mm 34.7 mm 34.9 mm 35.1 mm 35.3 mm 35.5 mm 35.7 mm 35.9 mm 36.1 mm 36.3 mm 36.5 mm 36.7 mm 36.9 mm 37.1 mm 37.3 mm 37.5 mm 37.7 mm 37.9 mm 38.1 mm 38.3 mm 38.5 mm 38.7 mm 38.9 mm 39.1 mm 39.3 mm 39.5 mm 39.7 mm 39.9 mm 40.1 mm 40.3 mm 40.5 mm 40.7 mm 40.9 mm 41.1 mm 41.3 mm 41.5 mm 41.7 mm 41.9 mm 42.1 mm 42.3 mm 42.5 mm 42.7 mm 42.9 mm 43.1 mm 43.3 mm 43.5 mm 43.7 mm 43.9 mm 44.1 mm 44.3 mm 44.5 mm 44.7 mm 44.9 mm 45.1 mm 45.3 mm 45.5 mm 45.7 mm 45.9 mm 46.1 mm 46.3 mm 46.5 mm 46.7 mm 46.9 mm 47.1 mm 47.3 mm 47.5 mm 47.7 mm 47.9 mm 48.1 mm 48.3 mm 48.5 mm 48.7 mm 48.9 mm 49.1 mm 49.3 mm 49.5 mm 49.7 mm 49.9 mm 50.1 mm 50.3 mm 50.5 mm 50.7 mm 50.9 mm 51.1 mm 51.3 mm 51.5 mm 51.7 mm 51.9 mm 52.1 mm 52.3 mm 52.5 mm 52.7 mm 52.9 mm 53.1 mm 53.3 mm 53.5 mm 53.7 mm 53.9 mm 54.1 mm 54.3 mm 54.5 mm 54.7 mm 54.9 mm 55.1 mm 55.3 mm 55.5 mm 55.7 mm 55.9 mm 56.1 mm 56.3 mm 56.5 mm 56.7 mm 56.9 mm 57.1 mm 57.3 mm 57.5 mm 57.7 mm 57.9 mm 58.1 mm 58.3 mm 58.5 mm 58.7 mm 58.9 mm 59.1 mm 59.3 mm 59.5 mm 59.7 mm 59.9 mm 60.1 mm 60.3 mm 60.5 mm 60.7 mm 60.9 mm 61.1 mm 61.3 mm 61.5 mm 61.7 mm 61.9 mm 62.1 mm 62.3 mm 62.5 mm 62.7 mm 62.9 mm 63.1 mm 63.3 mm 63.5 mm 63.7 mm 63.9 mm 64.1 mm 64.3 mm 64.5 mm 64.7 mm 64.9 mm 65.1 mm 65.3 mm 65.5 mm 65.7 mm 65.9 mm 66.1 mm 66.3 mm 66.5 mm 66.7 mm 66.9 mm 67.1 mm 67.3 mm 67.5 mm 67.7 mm 67.9 mm 68.1 mm 68.3 mm 68.5 mm 68.7 mm 68.9 mm 69.1 mm 69.3 mm 69.5 mm 69.7 mm 69.9 mm 70.1 mm 70.3 mm 70.5 mm 70.7 mm 70.9 mm 71.1 mm 71.3 mm 71.5 mm 71.7 mm 71.9 mm 72.1 mm 72.3 mm 72.5 mm 72.7 mm 72.9 mm 73.1 mm 73.3 mm 73.5 mm 73.7 mm 73.9 mm 74.1 mm 74.3 mm 74.5 mm 74.7 mm 74.9 mm 75.1 mm 75.3 mm 75.5 mm 75.7 mm 75.9 mm 76.1 mm 76.3 mm 76.5 mm 76.7 mm 76.9 mm 77.1 mm 77.3 mm 77.5 mm 77.7 mm 77.9 mm 78.1 mm 78.3 mm 78.5 mm 78.7 mm 78.9 mm 79.1 mm 79.3 mm 79.5 mm 79.7 mm 79.9 mm 80.1 mm 80.3 mm 80.5 mm 80.7 mm 80.9 mm 81.1 mm 81.3 mm 81.5 mm 81.7 mm 81.9 mm 82.1 mm 82.3 mm 82.5 mm 82.7 mm 82.9 mm 83.1 mm 83.3 mm 83.5 mm 83.7 mm 83.9 mm 84.1 mm 84.3 mm 84.5 mm 84.7 mm 84.9 mm 85.1 mm 85.3 mm 85.5 mm 85.7 mm 85.9 mm 86.1 mm 86.3 mm 86.5 mm 86.7 mm 86.9 mm 87.1 mm 87.3 mm 87.5 mm 87.7 mm 87.9 mm 88.1 mm 88.3 mm 88.5 mm 88.7 mm 88.9 mm 89.1 mm 89.3 mm 89.5 mm 89.7 mm 89.9 mm 90.1 mm 90.3 mm 90.5 mm 90.7 mm 90.9 mm 91.1 mm 91.3 mm 91.5 mm 91.7 mm 91.9 mm 92.1 mm 92.3 mm 92.5 mm 92.7 mm 92.9 mm 93.1 mm 93.3 mm 93.5 mm 93.7 mm 93.9 mm 94.1 mm 94.3 mm 94.5 mm 94.7 mm 94.9 mm 95.1 mm 95.3 mm 95.5 mm 95.7 mm 95.9 mm 96.1 mm 96.3 mm 96.5 mm 96.7 mm 96.9 mm 97.1 mm 97.3 mm 97.5 mm 97.7 mm 97.9 mm 98.1 mm 98.3 mm 98.5 mm 98.7 mm 98.9 mm 99.1 mm 99.3 mm 99.5 mm 99.7 mm 99.9 mm 100.1 mm 100.3 mm 100.5 mm 100.7 mm 100.9 mm 101.1 mm 101.3 mm 101.5 mm 101.7 mm 101.9 mm 102.1 mm 102.3 mm 102.5 mm 102.7 mm 102.9 mm 103.1 mm 103.3 mm 103.5 mm 103.7 mm 103.9 mm 104.1 mm 104.3 mm 104.5 mm 104.7 mm 104.9 mm 105.1 mm 105.3 mm 105.5 mm 105.7 mm 105.9 mm 106.1 mm 106.3 mm 106.5 mm 106.7 mm 106.9 mm 107.1 mm 107.3 mm 107.5 mm 107.7 mm 107.9 mm 108.1 mm 108.3 mm 108.5 mm 108.7 mm 108.9 mm 109.1 mm 109.3 mm 109.5 mm 109.7 mm 109.9 mm 110.1 mm 110.3 mm 110.5 mm 110.7 mm 110.9 mm 111.1 mm 111.3 mm 111.5 mm 111.7 mm 111.9 mm 112.1 mm 112.3 mm 112.5 mm 112.7 mm 112.9 mm 113.1 mm 113.3 mm 113.5 mm 113.7 mm 113.9 mm 114.1 mm 114.3 mm 114.5 mm 114.7 mm 114.9 mm 115.1 mm 115.3 mm 115.5 mm 115.7 mm 115.9 mm 116.1 mm 116.3 mm 116.5 mm 116.7 mm 116.9 mm 117.1 mm 117.3 mm 117.5 mm 117.7 mm 117.9 mm 118.1 mm 118.3 mm 118.5 mm 118.7 mm 118.9 mm 119.1 mm 119.3 mm 119.5 mm 119.7 mm 119.9 mm 120.1 mm 120.3 mm 120.5 mm 120.7 mm 120.9 mm 121.1 mm 121.3 mm 121.5 mm 121.7 mm 121.9 mm 122.1 mm 122.3 mm 122.5 mm 122.7 mm 122.9 mm 123.1 mm 123.3 mm 123.5 mm 123.7 mm 123.9 mm 124.1 mm 124.3 mm 124.5 mm 124.7 mm 124.9 mm 125.1 mm 125.3 mm 125.5 mm 125.7 mm 125.9 mm 126.1 mm 126.3 mm 126.5 mm 126.7 mm 126.9 mm 127.1 mm 127.3 mm 127.5 mm 127.7 mm 127.9 mm 128.1 mm 128.3 mm 128.5 mm 128.7 mm 128.9 mm 129.1 mm 129.3 mm 129.5 mm 129.7 mm 129.9 mm 130.1 mm 130.3 mm 130.5 mm 130.7 mm 130.9 mm 131.1 mm 131.3 mm 131.5 mm 131.7 mm 131.9 mm 132.1 mm 132.3 mm 132.5 mm 132.7 mm 132.9 mm 133.1 mm 133.3 mm 133.5 mm 133.7 mm 133.9 mm 134.1 mm 134.3 mm 134.5 mm 134.7 mm 134.9 mm 135.1 mm 135.3 mm 135.5 mm 135.7 mm 135.9 mm 136.1 mm 136.3 mm 136.5 mm 136.7 mm 136.9 mm 137.1 mm 137.3 mm 137.5 mm 137.7 mm 137.9 mm 138.1 mm 138.3 mm 138.5 mm 138.7 mm 138.9 mm 139.1 mm 139.3 mm 139.5 mm 139.7 mm 139.9 mm 140.1 mm 140.3 mm 140.5 mm 140.7 mm 140.9 mm 141.1 mm 141.3 mm 141.5 mm 141.7 mm 141.9 mm 142.1 mm 142.3 mm 142.5 mm 142.7 mm 142.9 mm 143.1 mm 143.3 mm 143.5 mm 143.7 mm 143.9 mm 144.1 mm 144.3 mm 144.5 mm 144.7 mm 144.9 mm 145.1 mm 145.3 mm 145.5 mm 145.7 mm 145.9 mm 146.1 mm 146.3 mm 146.5 mm 146.7 mm 146.9 mm 147.1 mm 147.3 mm 147.5 mm 147.7 mm 147.9 mm 148.1 mm 148.3 mm 148.5 mm 148.7 mm 148.9 mm 149.1 mm 149.3 mm 149.5 mm 149.7 mm 149.9 mm 150.1 mm 150.3 mm 150.5 mm 150.7 mm 150.9 mm 151.1 mm 151.3 mm 151.5 mm 151.7 mm 151.9 mm 152.1 mm 152.3 mm 152.5 mm 152.7 mm 152.9 mm 153.1 mm 153.3 mm 153.5 mm 153.7 mm 153.9 mm 154.1 mm 154.3 mm 154.5 mm 154.7 mm 154.9 mm 155.1 mm 155.3 mm 155.5 mm 155.7 mm 155.9 mm 156.1 mm 156.3 mm 156.5 mm 156.7 mm 156.9 mm 157.1 mm 157.3 mm 157.5 mm 157.7 mm 157.9 mm 158.1 mm 158.3 mm 158.5 mm 158.7 mm 158.9 mm 159.1 mm 159.3 mm 159.5 mm 159.7 mm 159.9 mm 160.1 mm 160.3 mm 160.5 mm 160.7 mm 160.9 mm 161.1 mm 161.3 mm 161.5 mm 161.7 mm 161.9 mm 162.1 mm 162.3 mm 162.5 mm 162.7 mm 162.9 mm 163.1 mm 163.3 mm 163.5 mm 163.7 mm 163.9 mm 164.1 mm 164.3 mm 164.5 mm 164.7 mm 164.9 mm 165.1 mm 165.3 mm 165.5 mm 165.7 mm 165.9 mm 166.1 mm 166.3 mm 166.5 mm 166.7 mm 166.9 mm 167.1 mm 167.3 mm 167.5 mm 167.7 mm 167.9 mm 168.1 mm 168.3 mm 168.5 mm 168.7 mm 168.9 mm 169.1 mm 169.3 mm 169.5 mm 169.7 mm 169.9 mm 170.1 mm 170.3 mm 170.5 mm 170.7 mm 170.9 mm 171.1 mm 171.3 mm 171.5 mm 171.7 mm 171.9 mm 172.1 mm 172.3 mm 172.5 mm 172.7 mm 172.9 mm 173.1 mm 173.3 mm 173.5 mm 173.7 mm 173.9 mm 174.1 mm 174.3 mm 174.5 mm 174.7 mm 174.9 mm 175.1 mm 175.3 mm 175.5 mm 175.7 mm 175.9 mm 176.1 mm 176.3 mm 176.5 mm 176.7 mm 176.9 mm 177.1 mm 177.3 mm 177.5 mm 177.7 mm 177.9 mm 178.1 mm 178.3 mm 178.5 mm 178.7 mm 178.9 mm 179.1 mm 179.3 mm 179.5 mm 179.7 mm 179.9 mm 180.1 mm 180.3 mm 180.5 mm 180.7 mm 180.9 mm 181.1 mm 181.3 mm 181.5 mm 181.7 mm 181.9 mm 182.1 mm 182.3 mm 182.5 mm 182.7 mm 182.9 mm 183.1 mm 183.3 mm 183.5 mm 183.7 mm 183.9 mm 184.1 mm 184.3 mm 184.5 mm 184.7 mm 184.9 mm 185.1 mm 185.3 mm 185.5 mm 185.7 mm 185.9 mm 186.1 mm 186.3 mm 186.5 mm 186.7 mm 186.9 mm 187.1 mm 187.3 mm 187.5 mm 187.7 mm 187.9 mm 188.1 mm 188.3 mm 188.5 mm 188.7 mm 188.9 mm 189.1 mm 189.3 mm 189.5 mm 189.7 mm 189.9 mm 190.1 mm 190.3 mm 190.5 mm 190.7 mm 190.9 mm 191.1 mm 191.3 mm 191.5 mm 191.7 mm 191.9 mm 192.1 mm 192.3 mm 192.5 mm 192.7 mm 192.9 mm 193.1 mm 193.3 mm 193.5 mm 193.7 mm 193.9 mm 194.1 mm 194.3 mm 194.5 mm 194.7 mm 194.9 mm 195.1 mm 195.3 mm 195.5 mm 195.7 mm 195.9 mm 196.1 mm 196.3 mm 196.5 mm 196.7 mm 196.9 mm 197.1 mm 197.3 mm 197.5 mm 197.7 mm 197.9 mm 198.1 mm 198.3 mm 198.5 mm 198.7 mm 198.9 mm 199.1 mm 199.3 mm 199.5 mm 199.7 mm 199.9 mm 200.1 mm 200.3 mm 200.5 mm 200.7 mm 200.9 mm 201.1 mm 201.3 mm 201.5 mm 201.7 mm 201.9 mm 202.1 mm 202.3 mm 202.5 mm 202.7 mm 202.9 mm 203.1 mm 203.3 mm 203.5 mm 203.7 mm 203.9 mm 204.1 mm 204.3 mm 204.5 mm 204.7 mm 204.9 mm 205.1 mm 205.3 mm 205.5 mm 205.7 mm 205.9 mm 206.1 mm 206.3 mm 206.5 mm 206.7 mm 206.9 mm 207.1 mm 207.3 mm 207.5 mm 207.7 mm 207.9 mm 208.1 mm 208.3 mm 208.5 mm 208.7 mm 208.9 mm 209.1 mm 209.3 mm 209.5 mm 209.7 mm 209.9 mm 210.1 mm 210.3 mm 210.5 mm 210.7 mm 210.9 mm 211.1 mm 211.3 mm 211.5 mm 211.7 mm 211.9 mm 212.1 mm 212.3 mm 212.5 mm 212.7 mm 212.9 mm 213.1 mm 213.3 mm 213.5 mm 213.7 mm 213.9 mm 214.1 mm 214.3 mm 214.5 mm 214.7 mm 214.9 mm 215.1 mm 215.3 mm 215.5 mm 215.7 mm 215.9 mm 216.1 mm 216.3 mm 216.5 mm 216.7 mm 216.9 mm 217.1 mm 217.3 mm 217.5 mm 217.7 mm 217.9 mm 218.1 mm 218.3 mm 218.5 mm 218.7 mm 218.9 mm 219.1 mm 219.3 mm 219.5 mm 219.7 mm 219.9 mm 220.1 mm 220.3 mm 220.5 mm 220.7 mm 220.9 mm 221.1 mm 221.3 mm 221.5 mm 221.7 mm 221.9 mm 222.1 mm 222.3 mm 222.5 mm 222.7 mm 222.9 mm 223.1 mm 223.3 mm 223.5 mm 223.7 mm 223.9 mm 224.1 mm 224.3 mm 224.5 mm 224.7 mm 224.9 mm 225.1 mm 225.3 mm 225.5 mm 225.7 mm 225.9 mm 226.1 mm 226.3 mm 226.5 mm 226.7 mm 226.9 mm 227.1 mm 227.3 mm 227.5 mm 227.7 mm 227.9 mm 228.1 mm 228.3 mm 228.5 mm 228.7 mm 228.9 mm 229.1 mm 229.3 mm 229.5 mm 229.7 mm 229.9 mm 230.1 mm 230.3 mm 230.5 mm 230.7 mm 230.9 mm 231.1 mm 231.3 mm 231.5 mm 231.7 mm 231.9 mm 232.1 mm 232.3 mm 232.5 mm 232.7 mm 232.9 mm 233.1 mm 233.3 mm 233.5 mm 233.7 mm 233.9 mm 234.1 mm 234.3 mm 234.5 mm 234.7 mm 234.9 mm 235.1 mm 235.3 mm 235.5 mm 235.7 mm 235.9 mm 236.1 mm 236.3 mm 236.5 mm 236.7 mm 236.9 mm 237.1 mm 237.3 mm 237.5 mm 237.7 mm 237.9 mm 238.1 mm 238.3 mm 238.5 mm 238.7 mm 238.9 mm 239.1 mm 239.3 mm 239.5 mm 239.7 mm 239.9 mm 240.1 mm 240.3 mm 240.5 mm 240.7 mm 240.9 mm 241.1 mm 241.3 mm 241.5 mm 241.7 mm 241.9 mm 242.1 mm 242.3 mm 242.5 mm 242.7 mm 242.9 mm 243.1 mm 243.3 mm 243.5 mm 243.7 mm 243.9 mm 244.1 mm 244.3 mm 244.5 mm 244.7 mm 244.9 mm 245.1 mm 245.3 mm 245.5 mm 245.7 mm 245.9 mm 246.1 mm 246.3 mm 246.5 mm 246.7 mm 246.9 mm 247.1 mm 247.3 mm 247.5 mm 247.7 mm 247.9 mm 248.1 mm 248.3 mm 248.5 mm 248.7 mm 248.9 mm 249.1 mm 249.3 mm 249.5 mm 249.7 mm 249.9 mm 250.1 mm 250.3 mm 250.5 mm 250.7 mm 250.9 mm 251.1 mm 251.3 mm 251.5 mm 251.7 mm 251.9 mm 252.1 mm 252.3 mm 252.5 mm 252.7 mm 252.9 mm 253.1 mm 253.3 mm 253.5 mm 253.7 mm 253.9 mm 254.1 mm 254.3 mm 254.5 mm 254.7 mm 254.9 mm 255.1 mm 255.3 mm 255.5 mm 255.7 mm 255.9 mm 256.1 mm 256.3 mm 256.5 mm 256.7 mm 256.9 mm 257.1 mm 257.3 mm 257.5 mm 257.7 mm 257.9 mm 258.1 mm 258.3 mm 258.5 mm 258.7 mm 258.9 mm 259.1 mm 259.3 mm 259.5 mm 259.7 mm 259.9 mm 260.1 mm 260.3 mm 260.5 mm 260.7 mm 260.9 mm 261.1 mm 261.3 mm 261.5 mm 261.7 mm 261.9 mm 262.1 mm 262.3 mm 262.5 mm 262.7 mm 262.9 mm 263.1 mm 263.3 mm 263.5 mm 263.7 mm 263.9 mm 264.1 mm 264.3 mm 264.5 mm 264.7 mm 264.9 mm 265.1 mm 265.3 mm 265.5 mm 265.7 mm 265.9 mm 266.1 mm 266.3 mm 266.5 mm 266.7 mm 266.9 mm 267.1 mm 267.3 mm 267.5 mm 267.7 mm 267.9 mm 268.1 mm 268.3 mm 268.5 mm 268.7 mm 268.9 mm 269.1 mm 269.3 mm 269.5 mm 269.7 mm 269.9 mm 270.1 mm 270.3 mm 270.5 mm 270.7 mm 270.9 mm 271.1 mm 271.3 mm 271.5 mm 271.7 mm 271.9 mm 272.1 mm 272.3 mm 272.5 mm 272.7 mm 272.9 mm 273.1 mm 273.3 mm 273.5 mm 273.7 mm 273.9 mm 274.1 mm 274.3 mm 274.5 mm 274.7 mm 274.9 mm 275.1 mm 275.3 mm 275.5 mm 275.7 mm 275.9 mm 276.1 mm 276.3 mm 276.5 mm 276.7 mm 276.9 mm 277.1 mm 277.3 mm 277.5 mm 277.7 mm 277.9 mm 278.1 mm 278.3 mm 278.5 mm 278.7 mm 278.9 mm 279.1 mm 279.3 mm 279.5 mm 279.7 mm 279.9 mm 280.1 mm 280.3 mm 280.5 mm 280.7 mm 280.9 mm 281.1 mm 281.3 mm 281.5 mm 281.7 mm 281.9 mm 282.1 mm 282.3 mm 282.5 mm 282.7 mm 282.9 mm 283.1 mm 283.3 mm 283.5 mm 283.7 mm 283.9 mm 284.1 mm 284.3 mm 284.5 mm 284.7 mm 284.9 mm 285.1 mm 285.3 mm 285.5 mm 285.7 mm 285.9 mm 286.1 mm 286.3 mm 286.5 mm 286.7 mm 286.9 mm 287.1 mm 287.3 mm 287.5 mm 287.7 mm 287.9 mm 288.1 mm 288.3 mm 288.5 mm 288.7 mm 288.9 mm 289.1 mm 289.3 mm 289.5 mm 289.7 mm 289.9 mm 290.1 mm 290.3 mm 290.5 mm 290.7 mm 290.9 mm 291.1 mm 291.3 mm 291.5 mm 291.7 mm 291.9 mm 292.1 mm 292.3 mm 292.5 mm 292.7 mm 292.9 mm 293.1 mm 293.3 mm 293.5 mm 293.7 mm 293.9 mm 294.1 mm 294.3 mm 294.5 mm 294.7 mm 294.9 mm 295.1 mm 295.3 mm 295.5 mm 295.7 mm 295.9 mm 296.1 mm 296.3 mm 296.5 mm 296.7 mm 296.9 mm 297.1 mm 297.3 mm 297.5 mm 297.7 mm 297.9 mm 298.1 mm 298.3 mm 298.5 mm 298.7 mm 298.9 mm 299.1 mm 299.3 mm 299.5 mm 299.7 mm 299.9 mm 300.1 mm 300.3 mm 300.5 mm 300.7 mm 300.9 mm 301.1 mm 301.3 mm 301.5 mm 301.7 mm 301.9 mm 302.1 mm 302.3 mm 302.5 mm 302.7 mm 302.9 mm 303.1 mm 303.3 mm 303.5 mm 303.7 mm 303.9 mm 304.1 mm 304.3 mm 304.5 mm 304.7 mm 304.9 mm 305.1 mm 305.3 mm 305.5 mm 305.7 mm 305.9 mm 306.1 mm 306.3 mm 306.5 mm 306.7 mm 306.9 mm 307.1 mm 307.3 mm 307.5 mm 307.7 mm 307.9 mm 308.1 mm 308.3 mm 308.5 mm 308.7 mm 308.9 mm 309.1 mm 309.3 mm 309.5 mm 309.7 mm 309.9 mm 310.1 mm 310.3 mm 310.5 mm 310.7 mm 310.9 mm 311.1 mm 311.3 mm 311.5 mm 311.7 mm 311.9 mm 312.1 mm 312.3 mm 312.5 mm 312.7 mm 312.9 mm 313.1 mm 313.3 mm 313.5 mm 313.7 mm 313.9 mm 314.1 mm 314.3 mm 314.5 mm 314.7 mm 314.9 mm 315.1 mm 315.3 mm 315.5 mm 315.7 mm 315.9 mm 316.1 mm 316.3 mm 316.5 mm 316.7 mm 316.9 mm 317.1 mm 317.3 mm 317.5 mm 317.7 mm 317.9 mm 318.1 mm 318.3 mm 318.5 mm 318.7 mm 318.9 mm 319.1 mm 319.3 mm 319.5 mm 319.7 mm 319.9 mm 320.1 mm 320.3 mm 320.5 mm 320.7 mm 320.9 mm 321.1 mm 321.3 mm 321.5 mm 321.7 mm 321.9 mm 322.1 mm 322.3 mm 322.5 mm 322.7 mm 322.9 mm 323.1 mm 323.3 mm 323.5 mm 323.7 mm 323.9 mm 324.1 mm 324.3 mm 324.5 mm 324.7 mm 324.9 mm 325.1 mm 325.3 mm 325.5 mm 325.7 mm 325.9 mm 326.1 mm 326.3 mm 326.5 mm 326.7 mm 326.9 mm 327.1 mm 327.3 mm 327.5 mm 327.7 mm 327.9 mm 328.1 mm 328.3 mm 328.5 mm 328.7 mm 328.9 mm 329

3G = 3W

Large white bloom on willow Platted
June 6, solitary, curled spirally on
back of leaf. Sh hd 2.0 as in next.

4 large yellowish white with white
bloom, eye black on black spot, mouth
brown. W. 3 ± Feet 6-12, 13, the large
clear. Body faintly greenish by transparency
with slight white bloom that runs
off. Body a little smaller, feet, very
cylindrical. Two feet spirally.

Legs distinctly 7-annulate, each
annulets with a row of little elevated
whitish spots. Spiracles dark, no
marks (~~see 22~~) Molt June 12 Sh hd 2.6

new hd 3.2 mm body higher than wide
^{spiracles on bloom}
cut down without molting June 23

can like Trichosoma but dead.

Calc .43 .66 1.97 1.4 rat .69
found .65 1.0 1.4 1.4

3H

Edge later, whacker, solitary, eating
large hole in poplar leaf, Platted. June 11.

Hd 1.4 greenish with a slight honey tinge
large, above back, a faint blackish
shade runs up and far from black really

^{very} a spot; mouth brown, dark mark for
antennae, hd fairly shiny. Body subtrans-
lucent poplar leaf green not shiny, legs
folded, no annulets or raised trace
Feet 6-11 13, and prongs short brownish

Blackish marks at base of clear tho.
feet. Nuchal line evident. No border

Hd .9, 1.0 hd as above but pale testaceous
jaw black. Body same, but slightly
shiny subannulate

Hd .65 testaceous shade up from black
eye brownish, body yellowish whitish
green by food by transparency, slightly
shiny subannulate

ing, please sign and return the attached proxy to the undersigned, at Boston, Mass.

By order of the Board of Directors,

J. M. FORBES,

Chairman.

CHICAGO, BURLINGTON & QUINCY R. R. CO.

Egg cut $\frac{1}{2}$ circular in section under
upper epidermis, 1.5 mm long
ash hol 1.2 1.0, 1.4

more seen different

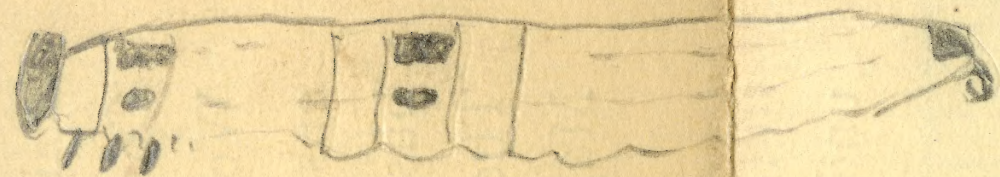
~~Imago June 25-1894, with
no green when fresh δ ,
all green except black, legs
greenish testaceous ϕ~~

~~Nematus dorsinitatus Cress.
(from Canada!) and Marlatt~~

abbot's 753-

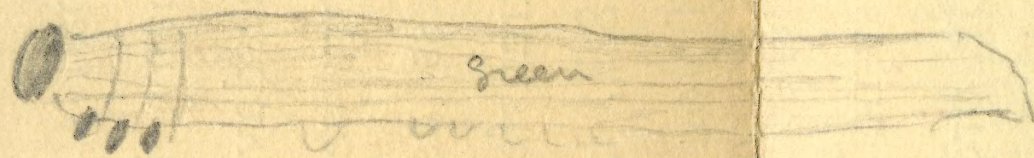
white pine

4 rows lay black spots



abietis 757

fir spruce
pitch pine



no spots

lecontei 758

unspotted pines
white pine (rare)
(old)

dirty yellowish black spotted

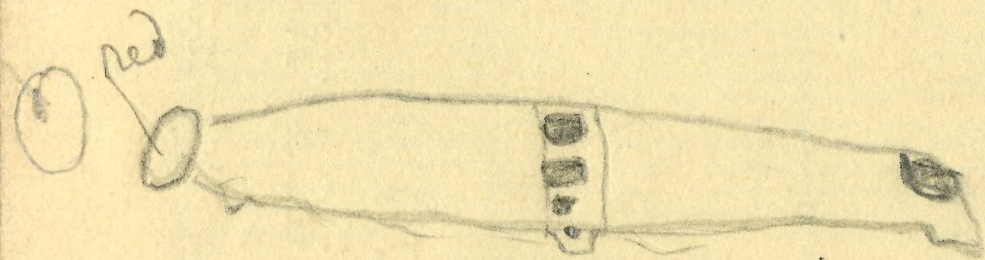
Had red
ventral

punctum 759

(rare)

~~pinus 20 (Europe)~~

mine

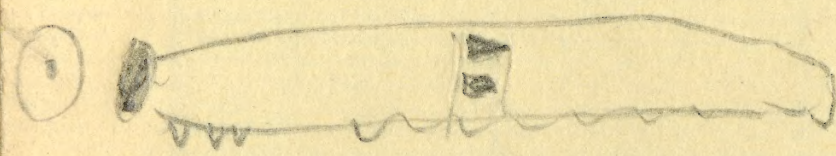


pinus rigida 759

pitch pine

(rare)

2H



2.4 ⑦
 75
 20
 8
 00 ⑥
 0
 5 ⑤
 2.5 ④
 2.5
 5
 7.5 ③
 2 ②

Laws of the Company, the Annual Meeting of the Stockholders of the Chicago, Burlington & Quincy Railroad Company will be held at the office of the Company in Chicago, Ill., at eleven o'clock A. M., Wednesday, May 8, 1895, to elect Directors for the ensuing year, and for the transaction of such other business as legally may come before the meeting. The transfer books will be closed from April 9th to May 8th, both inclusive.

If you cannot personally be present at the meet-

abolish ✓

abrites ✓

beamer

pinetree

frank

frank

Egg cut 1/2
 upper epu
 ash hol 1.2
 more seen
 dmapo
 no green
 oel green
 greenish
 nemat
 (fruit)

